IMPERIAL MYCOLOGICAL INSTITUTE

AN ANNOTATED BIBLIOGRAPHY

OF

MEDICAL MYCOLOGY

1946

The contracted titles used in this bibliography are based on the *World List of Scientific Periodicals*, with the following exceptions:

B.A. = *Biological Abstracts*
B.H. = *Bulletin of Hygiene*
R.A.M. = *Review of Applied Mycology*
T.D.B. = *Tropical Diseases Bulletin*
V.B. = *Veterinary Bulletin.*

646. **Bibliographia mycopathologica. (1940, I.)** [Mycopathological bibliography. (1940, I.)]—*Mycopathologia*, iii, 2, pp. 218–224, 1941. [Received October, 1946.]

This bibliography of mycopathological literature comprises 147 titles, published mostly in the first half of 1940, with a few dating from 1938 and 1939.

647. Emmons (C. W.). **Medical mycology in Latin America.**—*ex* **Plants and Plant Science in Latin America,** pp. 326–338, Chronica Botanica Co., Waltham, Mass., 1945.

After referring to the valuable contributions to medical mycology made by South American workers and briefly discussing how human fungal diseases differ fundamentally from most bacterial diseases, the author mentions some of the leading South American work on the subject since 1892, including, *inter alia*, Posada's researches on *Coccidioides immitis*, Seeber's investigations on *Rhinosporidium seeberi*, and Pedroso's isolation of *Hormodendrum* [*Phialophora*] *pedrosoi*. The paper concludes with a plea for inter-American co-operation in medical mycology.

648. Sanders (A. G.). **Effect of some antibiotics on pathogenic fungi.**—*Lancet*, ccl, 6385, pp. 44–46, 1946.

Of seven anti-bacterial substances of natural origin tested against a number of fungi pathogenic to man, gliotoxin, claviformin, and mycophenolic acid, a product of *Penicillium brevi-compactum*, gave encouraging results. Penicillin at 100 units per c.c. was ineffective and penicillic acid exerted only a fungistatic effect on nine out of twenty.

649. Southam (C. M.). **Antibiotic activity of extract of Western Red Cedar heartwood.**—*Proc. Soc. exp. Biol., N.Y.*, lxi, 4, pp. 391–396, 1 graph, 1946.

On a buffered medium of 2·5 per cent. desiccated malt extract in 2 per cent. agar, the growth of one or two strains of *Cryptococcus neoformans* and two out of three of *Microsporum audouini* was inhibited by the hot-water extract of western red cedar (*Thuja plicata*) heartwood at a concentration of 115 mg. per cent. Two strains of *Trichophyton gypseum*, three of *T. purpureum*, and one each of *Epidermophyton floccosum* and *M. felineum* were similarly affected by a dosage of 162 mg., but fungistasis in four strains of *Candida albicans* was accomplished only at the maximum concentration of 345 mg. per cent. On the same medium unbuffered, the growth of all the organisms was inhibited by

115 mg. per cent. and that of both strains of *Cryptococcus neoformans*, both of *T. gypseum*, two out of three of *T. purpureum*, the one of *M. felineum*, and two out of three of *M. audouini* by a dosage of 57 mg.

650. Moore (M.). **Radiate formation on pathogenic fungi in human tissue.**—*Arch. Path.*, xlii, 2, pp. 113–152, 5 figs., 1946.

The phenomenon of radiate formation termed 'actinomycetoid' is non-specific, being commonly encountered in actinomycosis (*Actinomyces bovis* or *A. israeli*), frequently observed in coccidioidal granuloma (*Coccidioides immitis*), and occasionally noted in aspergillosis (*Aspergillus* spp., including *A. fumigatus*), while its occurrence has also been reported in cases of sporotrichosis (*Sporotrichum schencki*), maduromycosis (*Actinomyces, Aspergillus*, and *Madurella* spp., *Rubromadurella langeroni*, *Monosporium apiospermum* [*Allescheria boydii*], etc.), paracoccidioidal granuloma (*Paracoccidioides brasiliensis*), chromomycosis (*Phialophora jeanselmei*), and blastomycosis (*Blastomyces dermatitidis*). A pathological study of the mycoses with which the radiation effect is associated invariably revealed a granulomatous response of the tissue, accompanied by some degree of suppuration and marked inflammation.

The radiating structures may be of the actinomycetoid type, i.e., in the form of clubs or rays with broadened tips; tubular prickles or crystalline needles; flattened, hyaloid extensions, with 'broken-off' tips and lateral angular projections; or peripheral, nondescript, short extensions partly or wholly surrounding the fungus. The rays stain pink with eosin and have consequently been referred to an acidophilic substance.

Two other formations observed on fungi in human tissue are capsules, notably on the cells of *Cryptococcus neoformans* and *Histoplasma capsulatum*, and gloeae in hair infections, e.g., piedra [*Piedraia hortai*].

651. Burdon (K. L.). **Fatty material in bacteria and fungi revealed by obtaining dried, fixed slide preparations.**—*J. Bact.*, lii, 6, pp. 665–678, 1946.

An improved technique is described for the demonstration of intracellular lipid in micro-organisms by staining dried, fixed preparations with Sudan black B and counterstaining with safranin or dilute carbol fuchsin. By this method stainable fatty material, in the form of cytoplasmic inclusions or associated with structural cellular elements, was shown to be present in *Actinomyces bovis*, *Blastomyces dermatitidis*, *Candida albicans*, *Coccidioides immitis*, *Cryptococcus neoformans*, *Epidermophyton floccosum*, *Histoplasma capsulatum*, *Hormodendrum* [*Phialophora*] *pedrosoi*, *Microsporum gypseum*, *P. verrucosa*, *Rhinosporidium seeberi*, *Sporotrichum schencki*, *Trichophyton mentagrophytes*, and other fungi.

652. Benedek (T.), Lewe (I.), Price (H.), Koransky (A.), & Van Horn (Flora). **Pompholyx (epidermophytosis, dermatophytosis, ringworm of the feet, infectious eczematoid dermatitis or ringworm, dyshidrosis).**—*Mycopathologia*, iii, 3–4, pp. 240–254, 1943.

A study of 983 cases of pompholyx revealed only 1·9 per cent. with clinically active lesions on the feet, and all were negative microscopically and culturally for any pathogenic fungus.

653. Hollström (E.). **On a fungus capable of producing acid-fast rods with special regard to its occurrence in lymphogranulomatosis benigna (Schaumann's disease).**—*Acta derm. venereol., Stockh.*, xxvi, 1, pp. 37–48, 1945. [*B.A.*, xx, No. 15832.]

This is a case report of lymphogranulomatosis benigna (Schaumann's

disease), with a study of a lymph gland removed from the vicinity of the gall-bladder; this gland contained ovoid fungal cells and slightly acid-fast rods. The author discusses the nature of the disease.

654. Moore (M.), Russell (W. O.), & Sachs (E.). **Chronic leptomeningitis and ependymitis caused by Ustilago, probably U. zeae (Corn smut). Ustilagomycosis, the second reported instance of human infection.**—*Amer. J. Path.*, xxii, 4, pp. 761–777, 2 pl., 1946.

A fatal case of chronic leptomeningitis and ependymitis, attributed to a species of *Ustilago*, probably *U. zeae* [*U. maydis*], in a 55-year-old farmer, is described from the Barnard Free Skin and Cancer Hospital, St. Louis, Missouri. The patient displayed certain symptoms associated with ergotism and ustilaginism in man and animals. This is believed to be the second proved case of human disease from a species of *Ustilago*, an earlier one having been reported by Preininger in *Arch. Derm. Syph., Wien*, clxxvi, pp. 109–113, 1937–8.

655. Cavallero (C.). **L'allergia e l'immunità nelle micosi. 4°. Allergia e immunità nelle micosi da Ifomiceti e da Ficomiceti (Chitridiali e Mucoracee).** [Allergy and immunity in mycoses. 4. Allergy and immunity in mycoses caused by Hyphomycetes and Phycomycetes (Chytridiales and Mucoraceae).]—*Mycopathologia*, iii, 3–4, pp. 310–337, 1943.

The author reviews and discusses with numerous references to the relevant literature the present state of knowledge concerning allergy and immunity in human and animal diseases caused by *Sporotrichum*, *Sporendonema epizoum* [*S. sebi*], *Monosporium apiospermum* [*Allescheria boydii*], *Coccidioides immitis*, *Paracoccidioides brasiliensis*, and other fungi. An extensive bibliography is appended.

656. Redaelli (P.). **Das Immunitätsproblem bei den Mykosen des Menschen.** [The problem of immunity from human mycoses.]—*Mycopathologia*, iii, 3–4, pp. 280–309, 1943. [Italian, Spanish, and English summaries.]

In general, the normal reaction of man to fungal infection takes the form of a certain degree of resistance. The problem is closely bound up with the question of the pathogenicity and virulence of the fungi concerned, their primary and secondary toxins, antigens, and allergens. Most fungi able to parasitize man are devoid of primary poisons, i.e., true soluble and diffusible exotoxins and strictly specific endotoxins, but are able to produce aspecific endotoxins. In human fungal diseases there is evidence of allergic immunity.

657. Baker (R. D.). **The classification of fungus infections according to form of fungus in tissues.**—*Sth. med. J.*, xxxviii, 4, pp. 272–276, 1945. [*B.H.*, xx, p. 438; *V.B.*, xvi, p. 295.]

The author suggests grouping fungi (as they appear to histopathologists) as follows. Group I, hyphae in tissues (*Actinomyces bovis*, *Nocardia* [*Actinomyces*] *asteroides*); Group II, spores in tissues (*Cryptococcus neoformans*, *Blastomyces dermatitidis*, *B. brasiliensis*, *Histoplasma capsulatum*, *Sporotrichum schencki*, *Hormodendrum* sp. and *Phialophora verrucosa*, *Coccidioides immitis*, and *Rhinosporidium seeberi*); Group III, hyphae and spores in tissues (*Candida albicans*, *Aspergillus* sp., *Mucor*, *Madurella* sp., *Monosporium apiospermum* [*Allescheria boydii*], *Trichophyton*, *Microsporum*, *Epidermophyton*, and *Malassezia furfur*).

658. Baker (R. D.). **Tissue changes in fungus diseases.**—*Amer. J. Path.*, xxii, 3, p. 644, 1946.

Several deep fungus infections, such as blastomycosis [*Blastomyces dermatitidis*], coccidioidomycosis [*Coccidioides immitis*], sporotrichosis [*Sporotrichum schencki*], and moniliasis [*Candida* spp.] (when a deep infection) show some degree of suppuration, macrophage and cell response, caseous necrosis, and fibrosis; others, such as actinomycosis, nocardiosis, and maduromycosis, show all these changes except caseous necrosis. A few of the deep mycoses are not usually attended with suppuration and some may run their course with only acute necrosis or acute inflammation. Superficial fungous infections may occasionally induce an acute or chronic inflammatory response. Chronic suppuration with fibrosis is probably the most common tissue change in deep fungus infection.

659. González Ochoa (A.). **Estudio comparativo entre Actinomyces mexicanus, A. brasiliensis, y A. asteroides.** [A comparative study of *Actinomyces mexicanus*, *A. brasiliensis*, and *A. asteroides*.]—*Rev. Inst. Salubr. Enferm. trop.*, vi, 3, pp. 155–162, 1945. [*B.A.*, xx, No. 10688.]

Enzymic tests proved the identity of *Actinomyces brasiliensis* (Eppingen, 1890) and the later-described *A. mexicanus* and established the validity of *A. asteroides* as a separate species.

660. González Ochoa (A.). **Mycosis.**—*Urol. cutan. Rev.*, l, 6, pp. 334–345, 1946.

The following mycoses were the subjects of papers read by the author at the Conference on Tropical Dermatology for American Doctors at Mexico City, 6th to 18th August, 1945: actinomycotic mycetoma (*Actinomyces mexicanus*, *A. brasiliensis*, *A. madurae*, *A. pelletieri*, and *A. asteroides*); tinea imbricata (*Trichophyton concentricum*); sporotrichosis (*Sporotrichum schencki*); and chromoblastomycosis (*Hormodendrum* [*Phialophora*] *pedrosoi*, *H. compactum* [*P. compacta*], and *P. verrucosa*). The papers were followed by the presentation of cases.

Practical demonstrations were given by Dr. F. Latapí of the thallium acetate treatment of tinea capitis (associated in 89·5 per cent. of Mexico City cases with *Trichophyton tonsurans*), followed by a round-table discussion.

661. Bruwer (A.). **Actinomycosis with special reference to its pathogenesis, its treatment, and its cure with penicillin.**—*Clin. Proc.*, v, 2, pp. 59–80, 1946.

The author summarizes the available information on the history, incidence, communicability, pathogenesis (exogenous, endogenous, or combined), classification, symptoms, immunology and serology, locations and spread, general and histologic pathology, bacteriology, diagnosis, treatment, and prognosis of actinomycosis. Under the penultimate heading is included a note on a case of cervico-facial actinomycosis at the Harlingham Red Cross Hospital for Plastic Surgery, Johannesburg, South Africa, in which the condition was arrested, and probably cured, by the intramuscular injection of a total of 3,500,000 units of penicillin.

662. Gins (H. A.) & Paasch (Elfriede). **Bakteriologische Befunde bei klinischer Aktinomykose.** [Bacteriological findings in clinical actinomycosis.]—*Zbl. Bakt.*, Abt. 1 (*Orig.*), cxlv, 7, pp. 402–424, 1940. [Received December, 1945.]

Only in one of the 14 cases suspected on the basis of the clinical symptoms induced as being of actinomycotic origin was an Actinomycete established as probably the sole etiological agent. In all the others an anaerobic mixed flora was concerned, and it is proposed that in future the diagnosis of 'suspected

actinomycosis' be reserved for the rare cases in which an Actinomycete alone is implicated.

663. Abrahams (I.) & Miller (J. K.). **The in vitro action of sulfonamides and penicillin on Actinomyces.**—*J. Bact.*, li, 2, pp. 145–148, 2 figs., 1946.

Sulphathiazole and sulphadiazine (10 to 20 per cent.) inhibited to some extent the growth of two strains of *Actinomyces* of human origin, while penicillin (0·1 to 0·2 units per ml. medium) entirely prevented their development.

664. Bohan (E. M.) & Serino (G. S.). **Cervicofacial actinomycosis successfully treated by penicillin and repeated aspirations.**—*Del. med. J.*, xvii, 11, pp. 213–214, 1945.

A case of cervicofacial actinomycosis (*Actinomyces bovis*), following extraction of a left lower molar tooth, in a 45-year-old male patient at the St. Francis Hospital, Wilmington, Delaware, yielded to penicillin therapy and repeated aspirations of pus from the abscess. The drug was administered in doses of 50,000 Oxford units every three hours night and day for nine days, after which it was reduced to 30,000 units every three hours for the next 12 days.

665. Negroni (P.). **'Actinomyces discofoliatus' Grüter señalado por primera vez en la Argentina.** [*Actinomyces discofoliatus* Grüter observed for the first time in Argentina.]—*Physis, B. Aires*, xv, 47, pp. 145–157, 11 figs., 1939. [Received September, 1946.]

A full account is given of the cultural, cytological, and biological characters of *Actinomyces discofoliatus*, originally isolated by Grüter in Germany from lachrymal concretions (*Z. Augenheilk.*, lxxix, pp. 477–510, 1932–3) and determined by the author as the agent of an abscess in the upper jaw of a 45-year-old male in Buenos Aires.

666. Negroni (P.). **Actinomicosis pulmonar. Micología.** [Pulmonary actinomycosis. Mycology.]—*Rev. Asoc. méd. argent.*, lix, 565, pp. 1033–1038, 9 figs., 1945.

This is a discussion of the relation of the following Actinomycetes to pulmonary disease in Argentina: the anaerobic species *Actinomyces israeli* and the aerobic, mycetoma-producing *A. asteroides*, *A. madurae*, and *A. bovis* (group), with brief notes on their mycological characters.

667. Baila (A. E.) & Macchi (A. J.). **Actinomicosis toraco-pleuro-pulmonar y penicilina.** [Thoracic-pleuro-pulmonary actinomycosis and penicillin.]—*Rev. Asoc. méd. argent.*, lx, 577–578, pp. 151–154, 4 figs., 1946.

On the basis of their experience to date, the authors recommend for the therapy of thoraco-pleuro-pulmonary actinomycosis three-hourly intramuscular injections of 15,000 to 20,000 units penicillin until a favourable effect is obtained, combined if necessary with local applications, and followed by further treatments at intervals not exceeding a fortnight to secure complete recovery.

668. Kirby (W. M. M.) & McNaught (J. B.). **Actinomycosis due to Nocardia asteroides.**—*Arch. intern. Med.*, lxxviii, 5, pp. 578–591, 3 figs., 1 graph, 1946.

Two new cases of actinomycosis (*Nocardia* [*Actinomyces*] *asteroides*) are added to a summary of 32 previously reported, one in a 63-year-old male and the other in a 49-year-old female, both resident in California. Autopsy in the former case revealed the fungus in the lungs, heart, thyroid, kidneys, spleen, intestines, muscles, and subcutaneous tissues, and in the latter in the cerebellum.

669. Shaw (F. W.), Holt (Rebecca A.), & Ray (E. S.). **Pulmonary actinomycosis due to Actinomyces asteroides.**—*Virginia med. Mon.*, lxxiii, 8, pp. 362–368, 9 figs., 1946.

The writers describe a case of pulmonary actinomycosis in a 34-year-old female patient at the Virginia Hospital, Richmond, Virginia, and the morphological and cultural characters of the causal organism, *Actinomyces asteroides*. Cultural studies are essential in the differential diagnosis of such cases in order to exclude the participation of *Mycobacterium tuberculosis*, and it is suggested that both aerobic and anaerobic cultures should be made of all suspected actinomycotic material. A large total dosage (5,000,000 to 10,000,000 units) of penicillin is recommended for the chemotherapy of actinomycosis, supplemented by adequate surgical drainage of all suppurative lesions.

670. Poppe (J. K.). **Treatment of pulmonary actinomycosis with a report of seven arrested cases.**—*J. thorac. Surg.*, xv, 2, pp. 118–126, 1946.

Detailed reports are given of seven cases (out of a total of 19 admitted to the Barnes Hospital, St. Louis, Missouri, since 1925) of pulmonary actinomycosis (*Actinomyces* spp.) apparently cured by repeated surgical drainages and other operative procedures, supplemented in three of the patients by penicillin therapy with beneficial results.

671. Sartory (A.), Sartory (R.), & Bouteille (J.). **Une actinomycose pulmonaire causée par un organisme acido-résistant nouveau, Actinomyces funduliformis n. sp.** [A pulmonary actinomycosis caused by a new acid-resistant organism, *Actinomyces funduliformis* n. sp.]—*C.R. Acad. Sci., Paris*, ccxxii, 15, pp. 914–915, 1946.

Actinomyces funduliformis n. sp., characterized by short chains of cells measuring 2·5 by 0·3 to 0·5μ, hyphae 10 to 25 to 0·4 to 0·5μ, with minute lateral swellings or even ramifications, allantoid elements in groups of three, five, or more, and short chains of arthrospores, was isolated on media containing maltose, glucose, saccharose, or mannite from the sputa of a 47-year-old female suffering from respiratory disturbances following a dental abscess. The fungus liquefies gelatine, coagulates milk, precipitates and peptonizes casein, produces hydrogen sulphide, and secretes an ebony-black pigment on agar, gelatine, starch paste, and potato. The optimum temperature for growth lay between 35° and 37° C. Inoculation experiments with cultures of the fungus resulted in the death of guinea-pigs in 40 days and rabbits in 70 when performed subcutaneously or intraperitoneally, while intrapulmonary injections killed both animals in a month. The patient was clinically cured by treatment with tincture of iodine at increasing dosages over a period of four months, followed by the administration of potassium iodide (4 gm. daily) on 20 days in two months.

672. Till (A. S.). **Acute miliary actinomycosis following perforated gastric ulcer.**—*Brit. J. Surg.*, xxxiv, 133, pp. 93–95, 4 figs. (3 col.), 1946.

This is an account of the clinical features and necropsy in a case of acute miliary actinomycosis (*Actinomyces bovis*) following perforated gastric ulcer in a 26-year-old male patient at the Middlesex Hospital, London.

673. McCrea (L. E.) & Spaulding (E. H.). **Aerobic Actinomyces in urine : preliminary report.**—*J. Urol.*, lv, 4, pp. 428–434, 4 figs., 1946.

At the Temple University Medical School, Philadelphia, *Actinomyces* of the non-fragmenting, aerobic, 'saprophytic' type was isolated from 35 out of

248 urine cultures (14·1 per cent.), 33 of the patients being women. The symptoms induced by the organism were those of a mild cystitis.

674. Mitra (S. K.). **A case of Madura foot treated with penicillin.**—*Indian med. Gaz.*, lxxxi, 2, p. 82, 1946.

Effective control of Madura foot (*Actinomyces madurae*) in a 45-year-old male Hindu was secured by the intramuscular administration of penicillin, a total dosage of 100,000 units being given.

675. Girardi (V. C.) & Khoury (C.). **Observaciones de pie de Madura en Buenos Aires.** [Observations on Madura foot in Buenos Aires.]—*Rev. Asoc. méd. argent.*, lx, 583, pp. 487–490, 2 figs., 1946.

Actinomyces madurae was isolated from a fistula on the dorsal surface of the right foot of a 22-year-old male patient at the Hospital Durand, Buenos Aires.

676. Plummer (P. J. G.). **Actinomycosis. Histological differentiation of actinomycosis and actinobacillosis.**—*Canad. J. comp. Med.*, x, 12, pp. 333–337, 4 figs., 1946. [French summary.]

The clinical manifestations and histopathology of actinomycosis (*Actinomyces bovis*) and actinobacillosis (? *Actinobacillus lignieresi*) are described with special reference to their differential diagnosis in livestock.

677. Verge (J.), Drieux (H.), & Quarante (M.). **La voie de pénétration d' Actinomyces israeli bovis agent de l'actinomycose des Bovidés.** [The means of entry of *Actinomyces israeli bovis*, the agent of bovine actinomycosis.]—*Bull. Acad. vét. Fr.*, xvii, pp. 41–43, 1944. [*V.B.*, xvi, p. 259.]

A description is given of pharyngeal infection by *Actinomyces israeli bovis* in a bovine.

678. Kimball (A.) & Frank (E. R.). **The isolation of Actinomyces bovis from fistulous withers and poll evil.**—*Amer. J. vet. Res.*, vi, pp. 39–44, 1945. [*V.B.*, xvi, 66.]

From 40 out of 55 cases of fistulous withers and 'poll evil' (50 and 5 horses, respectively), *Actinomyces bovis* was isolated and the organism identified, all the isolates being of the 'smooth' type described by Rosebury. 'Sulphur granules' were not detected in the lesions and it may be that rosette formation is only associated with the rough type.

Of two strains of *A. bovis* isolated from cervico-facial actinomycosis in man, one was 'smooth' and the other 'rough'. Only the latter type is a distinctively branching organism, the former occurring as a pleomorphic, diphtheroid organism composed of slender fusiform and filamentous elements often appearing in culture as short rods.

679. Vawter (L. R.). **Pulmonary actinomycosis in Swine.**—*J. Amer. vet. med. Ass.*, cix, 834, pp. 198–203, 8 figs., 1946.

The writer describes the mycological and histopathological characters of an organism, closely resembling *Actinomyces bovis* in many particulars, but differing from it in others, which was isolated on veal liver serum agar from the pus of lung lesions in a hog slaughtered in a local plant at Reno, Nevada. Distinctive features of the culture include the absence of branching hyphae, greater tolerance of atmospheric oxygen than is displayed by *A. bovis*, reduction of raffinose, inulin, and glycerol, and localization in the host tissues. Evidence for the endemic occurrence of pulmonary and visceral actinomycosis among swine is briefly adduced.

680. Cavallero (C.). **L'allergia e l'immunità nelle micosi.** [Allergy and immunity in the mycoses.]—*Mycopathologia*, iii, 2, pp. 140–181, 1941. [Received October, 1946.]

This is a critical survey and discussion of a number of outstanding contributions to the problems of allergy and immunity in the dermatomycoses.

681. Harsh (G. F.) & Allen (Sonia E.). **A study of the fungus contaminants of the air of San Diego and vicinity.**— *J. Allergy*, xvi, 3, pp. 125–135, 3 graphs, 1945.

A three-year study, by the gravity-slide and culture-plate methods, of the incidence of air-borne fungi at and near San Diego, California, revealed the occurrence of 131 species of 27 genera, with *Hormodendrum*, *Alternaria*, yeasts, *Penicillium*, *Macrosporium*, *Sporotrichum*, and *Helminthosporium* predominating, while those of minor importance included *Botrytis*, *Epicoccum*, *Pleospora*, *Chaetomium*, *Aspergillus*, *Stemphylium*, and *Pringsheimia*. The number of children allergic to moulds greatly exceeded that of adults, the percentages of 36 of the former group showing 1 plus and 2 to 4 plus reactions being 36 and 25, respectively, while the corresponding figures for the latter (117) were 18·8 and 6·8, respectively. The bearing of the size and shape of the more common mould spores on the significance of slide and plate counts in relation to the amount of allergen per unit volume of air is discussed.

682. Blumstein (G. I.) & McReynolds (S. U.). **Mold allergy. I. Field survey of Philadelphia area.**—*J. Allergy*, xvi, 6, pp. 285–296, 4 graphs, 1945.

The presence of a major mould season, persisting from mid-May until mid-October, has been demonstrated in the Philadelphia area. During this period there was a disproportionate increase in the large-spored moulds, notably *Alternaria* and *Hormodendrum* spp., and smuts. No direct correlation could be established between meteorological conditions and the incidence of moulds in the atmosphere. The spore content of the air appeared to fluctuate hourly. Spore showers were frequently observed. The results obtained by the gravity slide method were more uniform than the Petri dish counts, but an advantage of the latter technique was the facility of identification and enumeration of the smaller spores, so that both procedures should be used concurrently.

683. Hoffmann (W.). **Die Dreschkrankheit.** [The threshing disease.]—*Schweiz. med. Wschr.*, lxxvi, 39, pp. 988–990, 1946.

Particulars are given of a number of cases of the so-called 'threshing disease', which affected persons of varying age in both sexes during the autumn of 1945 in Appenzell, Switzerland. The symptoms included extreme weakness and fatigue, headache, respiratory discomfort, excessive thirst, and loss of appetite, and are attributed to the presence in the grain of pathogenic fungi. Ten of the 34 grey, shrivelled barley seeds examined by Dr. E. Gäumann yielded a species of (?) *Alternaria*, but no fungi developed from the similarly discoloured oats.

684. Harant (H.), Nguyen-Duc, & Huttel. **Remarque sur la maladie des Cannes de Provence.** [Observation on the Provence Reed disease.]—*Bull. Soc. Path. exot.*, xxxvii, 7–8, pp. 210–212, 1945.

Workers of both sexes engaged in paper manufacture from reeds (*Arundo donax*) in Provence, France, contracted cutaneous lesions from carrying the material on their shoulders and respiratory disturbances from sawing it. The interior of the reeds was found to harbour *Acrocylindrium granulosum*, while

the leaves and stems were infected by a *Helminthosporium* and a species of *Sporotrichum* characterized by glistening white colonies, a hyaline, irregularly septate mycelium, hyphae 2 to 2·5μ in diameter, and ovoid conidia 3·5 to 4 by 2·5μ, sessile on the hyphae or borne on minute ramuscules. Only the last-named was pathogenic to man and laboratory animals.

685. Sharp (W. B.) & John (Mildred B.). **Pathogenicity of the Aspergilli of otomycosis.**—*Tex. Rep. Biol. Med.*, iv, 3, pp. 353–363, 1946.

The fungi associated with otomycosis are common saprophytes abounding on the normal skin and in the dust of the air. *Aspergillus niger* and *A. flavus* were the predominant organisms observed in the authors' 12 cases. The ear isolates of these moulds were not more toxic to rabbits than other strains of the same species, nor were they antigenically distinguishable from the latter.

686. Coon (E. H.), Smith (H. B.), & Walsh (J. C.). **Report of a case of Aspergillus fumigatus infection of the tracheo-bronchial tree.**—*Med. Times, N.Y.*, lxxiv, 8, pp. 225–226, 230, 1946.

Particulars are given of a case of aspergillosis (*Aspergillus fumigatus*) of the tracheo-bronchial system in a 65-year-old male patient at the Nassau County (New York State) sanatorium, this being apparently the first record of pulmonary infection by the mould in the locality. Beneficial effects were secured by the administration of potassium iodide.

687. Cleland (J. B.). **Moulds in the lungs.**—*Med. J. Aust.*, xxxiii (i), 8, p. 247, 1 fig., 1946. [*B.H.*, xxi, 513.]

Four cases of pulmonary disease associated with unidentified moulds (one [*Aspergillus*] causing aspergillosis) are briefly reported from Adelaide hospitals.

688. Bereston (E. S.) & Waring (W. S.). **Aspergillus infection of the nails.**—*Arch. Derm. Syph., N.Y.*, liv, 5, pp. 552–557, 2 figs., 1946.

Repeated cultures in six cases of onychomycosis showed *Aspergillus glaucus* to be the agent in three, *A. nidulans* in one, and *A. glaucus* and *Trichophyton rubrum* together in two. *A. glaucus* was responsible for the condition in four of a further seven cases in which cultures were made once, and *A. nidulans* in the other three. Besides the usual characteristics of other forms of onychomycosis, the nail plates of the 13 patients under observation showed a typical greenish discoloration. It was demonstrated that the *A.* spp. involved were actually present in abundance in the infected nails, and cannot be regarded as accidental clinical or laboratory contaminations.

689. Battelli (C.). **Sopra alcuni casi di aspergillosi aviare in Eritrea.** [On some cases of avian aspergillosis in Eritrea.]—*Boll. Soc. ital. Med. Ig. trop.* (*Sez. Eritrea*), Asmara, iv, 5–6, pp. 937–950, 1944. [*V.B.*, xvi, 97.]

Three cases of avian aspergillosis (*Aspergillus fumigatus*) are recorded from Asmara, one in a fowl and two in turkeys. The fungus was isolated and parenteral introduction into fowls, pigeons, rabbits, and guinea-pigs induced a rapidly fatal disease. One administration results in a chronic cachectic condition, sometimes with nervous symptoms. An alcohol extract of the fungus introduced intravenously into a rabbit caused death within a few hours, and some of the symptoms induced by the fungus may be due to toxic products from the localized mycelium.

690. Dechambre (E.), Guillot (G.), & Roth (P.). **Quelques cas d'aspergillose chez des Oiseaux de Volière.** [A few cases of aspergillosis in caged Birds.]—*Bull. Acad. vét. Fr.*, xvii, pp. 369–371, 1944. [*V.B.*, xvi, 97.]

After testing birds from zoological gardens attacked by aspergillosis, the authors record the isolation of *Aspergillus fumigatus* from a tanager (*Tanagra* sp.), a European flamingo (*Phoenicopterus ruber antiquorum*), a king vulture (*Gypagus papa*), and a cormorant (*Phalacrocorax carbo*). The sites and nature of the lesions are fully described.

691. Bellrose (F. C.). **Aspergillosis in Wood Ducks.**—*J. Wildlife Mgmt*, ix, 4, pp. 325–326, 1945.

A disease of wood ducks (*Aix sponsa*), which had been fed on spoiled maize near Havana, Illinois, is attributed to *Aspergillus fumigatus*.

692. Friedman (L. L.) & Signorelli (J. J.). **Blastomycosis ; a brief review of the literature and a report of a case involving the meninges.**—*Ann. intern. Med.*, xxiv, 3, pp. 385–400, 6 figs., 1946. [*B.A.*, xx, No. 10684.]

Blastomycosis (*Blastomyces dermatitidis*), though uncommon, is important because both the systemic and cutaneous forms can simulate numerous other clinical conditions. Of the systemic cases, 90 per cent. terminate fatally; the cutaneous type does not endanger life, but is chronic and tends to recur even after apparently effective treatment. In over 95 per cent. of cases of the systemic kind the lungs are involved, while in most the bones and joints are affected, but no organ or tissue is immune. Involvement of the meninges is very rare, and the authors add a further case to the records. A combination of iodide and vaccine therapy is regarded as the best treatment for the systemic disease, and X-ray therapy for early small skin lesions.

693. Cassady (J. V.). **Uveal blastomycosis.**—*Arch. Ophthalm., N.Y.*, xxxv, 2, pp. 84–97, 11 figs., 1946.

Details are given of a fatal case of blastomycosis (*Blastomyces dermatitidis*) in a 64-year-old male at South Bend, Indiana, with involvement of the eye. *Candida parapsilosis* was isolated from the cutaneous lesions.

694. Levine (S.) & Ordal (Z. J.). **Factors influencing the morphology of Blastomyces dermatitidis.**—*J. Bact.*, lii, 6, pp. 687–694, 5 figs., 1946.

Temperature is the most important factor influencing morphological changes in *Blastomyces dermatitidis* on a complete (peptone-glucose) medium, the optima on which for the mycelial and yeast-like forms are 31° and 35° C., respectively. On this medium both phases develop through a wide range of hydrogen-ion concentrations above pH 3·5, except at 37°, when there was no growth at or below 4·5. On a deficient (ammonium sulphate-glucose) medium, the optimum temperatures for the mycelial and yeast-like forms are 33° and 37°, respectively, and the optimum hydrogen-ion concentration for both phases pH 8·5. *B. dermatitidis* does not require any of the ordinary accessory factors for growth, but the amino acids exert a stimulatory action.

695. Versiani (O.). **Blastomycose.** [Blastomycosis.]—*Rev. brasil. Biol.*, v, 1, pp. 37–60, 32 figs., 1945. [*B.A.*, xx, No. 3182.]

The author reports 18 cases of blastomycosis from Minas Gerais. The disease may affect the skin, lymphatics, bones, viscera, and lungs, and frequently produces general infection. The identity of the causal organisms, some of which resembled *Blastomyces dermatitidis*, *Paracoccidioides* [*brasiliensis*], or *Coccidioides immitis* was not determined.

696. De Almeida (F.), Ribeiro (D. O.), Ashcar (H.), Da Silva Lacaz (C.), & Prado Sampaio (S. de A.). **I. Ação da penicilina, 'in vitro', sôbre o Paracoccidioides brasiliensis. II. Resultados obtidos com a administração dêsse antibiótico no tratamento da 'blastomicose sul-americana'.** [I. Action of penicillin, *in vitro*, on *Paracoccidioides brasiliensis*. II. Results obtained by the administration of this antibiotic in the treatment of South American blastomycosis.]—*Hospital, Rio de J.*, xxix, 1, pp. 109–112, 1 fig., 1946.

Neither in *in vitro* experiments nor when administered by intramuscular injections to three patients suffering from South American blastomycosis (*Paracoccidioides brasiliensis*) did penicillin give effectual control of the fungus.

697. Watrin (J.) & Surdey. **Blastomycose cutanée à foyers multiples.** [Cutaneous blastomycosis with multiple foci.]—*Sem. Hôp. Paris*, xxii, 7, pp. 280–283, 5 figs., 1946.

Schizosaccharomyces hominis Benedek was isolated in pure culture on carrot and potato agar from the multiple cutaneous lesions on various parts of the body of an 83-year-old farmer. A complete cure was effected by a total of 15 injections of blastomycosin (0·5 c.c. every three days), a matter of some interest in view of the patient's age, the extent and number of the lesions, and the long duration of the trouble.

698. Seibold (H. R.). **Systematic blastomycosis in Dogs. A report of two cases.**—*N. Amer. Vet.*, xxvii, pp. 162–164, 1946. [*V.B.*, xvi, p. 294.]

The histological findings on specimens from two dogs in North Carolina were consistent with those of human blastomycosis, and numerous organisms typical of *Blastomyces dermatitidis* were present in the lesions.

699. Whiffen (Alma J.), Bohonos (N.), & Emerson (R. L.). **The production of an antifungal antibiotic by Streptomyces griseus.**—*J. Bact.*, lii, 5, pp. 610–611, 1946.

An anti-fungal substance produced by Waksman's No. 4 strain of *Streptomyces griseus* differed from streptomycin in its high order of antibiotic activity against a number of yeasts and the absence of any such property in respect of the bacteria tested. Of the fungal pathogens included in the experiments, only *Cryptococcus neoformans* proved highly sensitive, being inhibited at a dilution of 1 gm. in 1,300,000.

700. Goetz (Catherine G.). **Phases in the life cycle of the etiologic agent of Torula meningitis.**—*Abstr. Thes. Tulane Univ.*, xlv, 13, p. 15, 1944. [*B.A.*, xx, No. 13157.]

The life-cycle in culture of the organism causing *Torula* meningitis fell into three periods: propagation by budding, conjugation, and renewed budding. The alternation of asexual and sexual reproduction (with ascus formation) suggests that the fungus is *Debaryomyces hominis* [*Cryptococcus neoformans*].

701. Mager (J.) & Aschner (M.). **Starch reaction as aid in identification of causative agent of 'European blastomycosis'**—*Proc. Soc. exp. Biol., N.Y.*, lxii, 1, pp. 71–72, 1946. [*B.H.*, xxi, 779.]

From a study of 17 strains of *Torulopsis* (*Cryptococcus*) *neoformans* the author found that all produced extracellular starch when grown in the following medium: ammonium sulphate 0·1 per cent., magnesium sulphate 0·05 per cent., potassium dihydrogen phosphate 0·1 per cent., glucose 1 per cent., thiamin 0·2 μgm. per ml., and agar 2·5 per cent. Petri dish cultures incubated

at 37° C. for some days are flooded with Lugol's iodine which shows up the starch. Yeasts of other genera did not show the reaction. *C. neoformans* may be distinguished from non-pathogenic species of *Torulopsis* by its higher optimum temperature of 37°.

702. Voyles (G. Q.) & Beck (E. M.). **Systemic infection due to Torula histolytica (Cryptococcus hominis). I. Report of four cases and review of the literature.**—*Arch. intern. Med.*, lxxvii, 5, pp. 504–515, 1946. [*B.H.*, xxi, 741.]

A summary of the literature on torulosis (*Cryptococcus hominis*) [*C. neoformans*] is presented, emphasizing the pertinent clinical and laboratory investigations, and four additional cases (all males) are described from Indianapolis, Indiana, with autopsy observations. The pathogenesis of the disease remains obscure.

703. Beck (E. M.) & Voyles (G. Q.). **Systemic infection due to Torula histolytica (Cryptococcus hominis). II. Effect of chemotherapeutic agents in experimentally produced infections.**—*Arch. intern. Med.*, lxxvii, 5, pp. 516–525, 6 figs., 1946. [*B.H.*, xxi, p. 742.]

In experimental studies on laboratory animals inoculated with *Torula histolytica* (*Cryptococcus hominis*) [*C. neoformans*] no beneficial effects were observed from treatment with potassium iodide and sulphadiazine, alone or in combination.

704. De Bré (R.), Lamy (M.), Nick (J.), Grumbach (Mlle), & Normand (E.). **Développement d'une méningite à 'Torula histolytica' chez un enfant de douze ans, atteint de lympho-granulomatose maligne.** [Development of a meningitis due to *Torula histolytica* in a 12-year-old child suffering from malignant lympho-granulomatosis.]—*Bull. Acad. Méd. Paris*, cxxx, 25, pp. 443–449, 1946.

This is a full account and discussion of a fatal case of meningitis (*Torula histolytica*) [*Cryptococcus neoformans*] in a 12-year-old boy recently treated for Hodgkin's disease.

705. Saibene (G.). **Considerazioni etiologiche e patogenetiche su tre casi di 'nigrities linguae'.** [Etiological and pathogenetic considerations on three cases of 'nigrities linguae'.]—*Sperimentale*, xcviii, 1–2, pp. 54–71, 3 figs. (1 col.), 1946.

This is a discussion of the etiology and pathogenesis of 'black tongue', illustrated by three cases at the otolaryngological clinic of Florence University, two of which yielded fungi in pure culture, one a *Monilia* [*Candida*] and the other *Cryptococcus hominis* [*C. neoformans*].

706. Lewin (W.). & Roux (P.). **Torula infection of the nervous system : four recent cases.**—*S. Afr. med. J.* xx, 1, pp. 2–5, 6 figs., 1946.

Four cases of meningo-encephalitis, of which three were fatal, caused by *Torula histolytica* [*Cryptococcus neoformans*], are reported from Johannesburg with brief clinical notes and laboratory observations.

707. Bennett (S. C. J.). **Cryptococcus infection in Equidae.**—*J. R. Army vet. Cps*, xvi, pp. 108–118, 1944. [*V.B.*, xv, 291.]

Cases of infection of horses and other equines by *Cryptococcus* [? *farciminosus*] in the Sudan are reported in which the lesions are confined to the lung or lungs and associated lymph nodes without any antecedent history of septic wounds. The symptoms are described in detail. It is argued that slaughter is not justifiable in countries when the disease is enzo-otic, though

it may protect the virtually isolated units such as mounted police. Total mortality is not more than 10 to 15 per cent. and all cases should be treated when there is likelihood of early recovery. Medicinal treatment is useless, but surgery has given fairly good results. *C. mirandei* of the donkey is not accepted as a valid species.

708. Calero (C.). **Chromoblastomycosis : report of two new cases observed in the Isthmus of Panama.**—*Arch. Derm. Syph., N.Y.*, liv, 3, pp. 265–277, 6 figs., 1946.

Two new cases of chromoblastomycosis are reported from Panama, bringing the total in the Isthmus to three and in the world to 154. Both the patients were white farmers in the late forties, and the causal organism in one, suffering from lesions of 8½ years' duration extending from the right knee to the sole, was referred to *Fonsecaea pedrosoi* var. *cladosporioides* [*Phialophora pedrosoi*: see entry 283], and in the other, whose left forearm and hand had been involved for 2½ years, to *F. pedrosoi* var. *communis*. The former patient responded favourably to Roentgen-ray therapy with a total of 11,700 r. administered in series between 22nd December, 1944, and 4th April, 1945, but the permanency of the cure was in doubt on his discharge from hospital; the latter appeared to be completely cured by surgical extirpation of the nodules and electrocoagulation.

709. Simson (F. W.). **Chromoblastomycosis. Some observations on the types of the disease in South Africa.**—*Mycologia*, xxxviii, 4, pp. 432–449, 10 pl., 1946.

Twelve cases of chromoblastomycosis are recorded from the Union of South Africa (including six reported in 1943), ten on Africans and two on Europeans. In six, no organism was isolated, but of the remainder, three showed two or three widely separated lesions, from which a fungus was isolated having the cultural characters of *Fonsecaea pedrosoi typicus* [*Phialophora pedrosoi*], while the other three presented multiple lesions from which a fungus with the cultural characters of *F. pedrosoi* var. *cladosporium* [? *cladosporioides*] was obtained. Experimental evidence demonstrated that the tissue form of *F. pedrosoi* var. *cladosporium* remained viable after being maintained at freezing-point for 14 days.

710. Azulay (R. D.). **Experimental studies on chromoblastomycosis.**—*J. invest. Derm.*, vi, 5, pp. 281–292, 1945. [*B.A.*, xx, No. 10678.]

A strain of *Fonsecaea* [*Phialophora*] *pedrosoi* from a typical lesion in man was inoculated, after three years under laboratory conditions, into guinea-pigs and white rats [see also entry 496]. Only intratesticular inoculation was successful, the animals dying in three to eight weeks. Histological examination showed abscesses and the presence of numerous spores. Old laboratory strains 5 to 22 years of age were not pathogenic.

711. Saxton (W. J.), Hatcher (F.), & Derrick (E. H.). **Chromoblastomycosis, with reports of two cases occurring in Queensland.**—*Med. J. Aust.*, xxxiii (i), 20, pp. 695–697, 6 figs., 1946. [*T.D.B.*, xliii, 1169.]

Two cases of chromoblastomycosis are described from Queensland, both in males, one 45 and the other 60 years old. In the former the forearm was involved and in the latter the hand. In the case of the younger patient (in whom the condition was of seven years' duration), the microscopic examination of the granuloma revealed round or oval brown elements, 5 to 14 (mostly 8 to 10)μ in diameter, staining green with Giemsa's reagent and gentian-violet with Gram's. The fungus is not identified.

712. Hicks (J. D.). **Chromoblastomycosis: report of a case.**—*Med. J. Aust.*, xxxiii (ii), 20, pp. 705–706, 1946.

Chromoblastomycosis is encountered chiefly among farmers, and the present case (the third to be reported from Australia) is of special interest as occurring in a 42-year-old soldier stationed in the Northern Territory. The purplish, slightly raised lesion over the medial condyle of the right femur was removed by excision. The histological findings are briefly described, but the causal organism is not identified.

713. Roessler (W. G.), Herbst (E. J.), McCullough (W. G.), Mills (R. C.), & Brewer (C. R.). **Studies with Coccidioides immitis. I. Submerged growth in liquid mediums. II. In vitro effects of streptothricin and streptomycin.**—*J. infect. Dis.*, lxxix, 1, pp. 12–26, 11 figs., 2 graphs, 1946.

Liquid 'synthetic' and 'natural' media were developed in 1945 at Camp Detrick, Frederick, Maryland, for the submerged growth of cultures of *Coccidioides immitis*. The former consisted of 0·08 M ammonium acetate, 0·11 M glucose, 0·008 M magnesium sulphate, 0·015 M dipotassium hydrogen phosphate, 0·015 M potassium dihydrogen phosphate, and 2 p.p.m. $zinc^{++}$, and the latter of 1 per cent. peptone, 2 per cent. glucose, 0·008 M magnesium sulphate, 0·015 M dipotassium phosphate, 0·015 M phosphate, 2 p.p.m. $zinc^{++}$, and 0·1 per cent. plasmolysed yeast. Maximum spore yields were produced in submerged liquid cultures with a ten-day incubation period. Some 95 per cent. of the total growth in such cultures consisted of spores, of which 45 per cent. was in the form of single spores.

The Sabouraud's medium previously used for the surface growth of *C. immitis* was improved by reducing the glucose content to 1 per cent. and raising the pH to 7·2. A 'synthetic' agar made by solidification of the 'synthetic' medium proved useful in the isolation of the fungus from contaminated material.

Two hours' exposure to a temperature of 46° C. did not impair the viability of *C. immitis*, but all the viable cells were killed in four minutes at 60°, while 95 per cent. of the cells in a dilute suspension succumbed after two hours at 52°. The cultures in the above-mentioned media retained their viability for periods up to two months at 5°.

Streptothricin in concentrations exceeding 1 unit per ml. inhibited the growth of the pathogen in liquid cultures, while the process was complete over a period of six weeks at higher dosages, e.g., 30 units per ml. Grown in the presence of the antibiotic, *C. immitis* presents abnormal morphological features, including clumping and absence of septation and sporulation. Streptothricin in concentrations exceeding 10 units per ml. further inhibited the growth of the fungus in poured agar plates. Streptomycin failed to prevent development.

714. Roessler (W. G.), Herbst (E. J.), McCullough (W. G.), Mills (R. C.), & Brewer (C. R.). **The nutrition of Coccidioides immitis in submerged culture.**—Abs. in *J. Bact.*, li, 5, p. 572, 1946.

Yields consisting mainly of single or concatenate spores of *Coccidioides immitis*, in excess of 2×10^8 viable fragments per ml., were obtained at Camp Detrick, Frederick, Maryland, in a medium composed of 0·08 M ammonium acetate, 0·11 M glucose, 0·008 M magnesium sulphate, 0·015 M dipotassium hydrogen phosphate, 0·015 M potassium dihydrogen phosphate, and 0·00003 M zinc sulphate. The following sequence of development was observed: spore germination, growth of non-septate mycelia, septation, rounding of septa to form spores, spore maturation, and disintegration of spore chains with liberation of free spores. Plate counts reached a maximum in ten days. The spores produced on this substratum were fully pathogenic to guinea-pigs.

715. Montessori (P. P.). **La granulomatosi coccidioide in Europa.** [The coccidioidal granulomatosis in Europe.]—*Mycopathologia*, iii, 2, pp. 131–139, 1941. [German and English summaries. Received October, 1946.]

The four so-called autochthonous European cases of coccidioidal granuloma are reviewed and discussed in the light of the author's observations. Two of the three cases occurring at Naples, involving the pneumobronchial system, were referred to *Coccidioides immitis*, and the third (granuloma of the glutea) to *Glenospora metaeuropea*. The latter was believed to have also been implicated in the case of an individual in London infected while travelling in the Balkans. The author's studies corroborate the conclusions of Ciferri and Redaelli as to the etiological role of *C. immitis* in the Neapolitan cases [*R.A.M.*, xvi, p. 461], and the same organism is thought to have been concerned in the Balkan infection. The results of inoculation experiments on laboratory animals supported this view.

The European strains of the granulomatous fungus should accordingly be comprised in the specific entity of *C. immitis* as understood in the United States, and the variety *C. immitis* var. *metaeuropea*, established by Ciferri and Redaelli on a geographical basis, rejected.

716. Wilhelm (S.). **Isolation of Coccidioides immitis from sputum.**—*Bull. U.S. Army med. Dep.*, v, pp. 468–473, 1946. [*B.A.*, xx, No. 15836.]

In isolating *Coccidioides immitis* from sputum a medium was developed which by reason of its lowered pH inhibited bacterial growth. A tryptose agar was acidified with 2*N* hydrochloric acid to pH 3·5 after autoclaving and while hot, heavily inoculated and incubated at 37° C. Concentrated sputum should not be used. If viable *C. immitis* is present, pure white, fluffy colonies appear in three to four days. Chlamydospores are formed in four or five days. Directly any suspicious growth develops the plates are removed to room temperature to prevent drying. Another satisfactory medium was a tryptose agar containing a mixture of methylene blue and neutral acriflavine, each at 1:32,000. On this green medium the pure-white colonies of *C. immitis* become green in the centre following chlamydospore formation.

717. Goren (M. L.). **Localized coccidioidomycosis of bone. Report of a case.**—*J. Bone Jt Surg.*, xxviii, 1, pp. 157–160, 2 figs., 1946. [*T.D.B.*, xliii, 779.]

The author describes the case of a 22-year-old negro soldier who developed a suppurating swelling on his finger following a cut made while serving in the desert near Indio, California. No fungus was noted. Sulphonamide treatment failed, and the finger was amputated. Microscopic examination of the lesion showed a granuloma suggestive of tuberculosis, but with numerous thick-walled spherules which did not show budding and were believed to be *Coccidioides immitis*. The coccidioidin skin test and the serum complement-fixation test both gave positive results, and the diagnosis of coccidioidomycosis was regarded as confirmed.

718. Sashin (D.), Brown (G. N.), Laffer (N. C.), McDowell (H. C.), & Boeing (P. J.). **Disseminated coccidioidomycosis localized in bone.**—*Amer. J. med. Sci.*, ccxii, 5, pp. 565–573, 5 figs., 1946.

Two cases of disseminated coccidiomycosis with localized lesions in bone are described. Both patients were coloured soldiers in the United States Army stationed in southern Arizona for 11 months. Complement-fixation tests of the patients' serum were positive for *Coccidioides immitis*, which also developed in pure cultures from both cases. Mice inoculated with these cultures

died, and at autopsy gross lesions were found typical of coccidioidal infection. Concentrated curettings of the biopsy material were also lethal to mice, the characteristic spherules of the fungus being demonstrated in the lesions and the organism recovered from the animals in culture. One of the patients succumbed to the dissemination of the fungus all over the body.

719. Smith (C. E.), Beard (R. R.), Whiting (E. G.), & Rosenberger (H. G.). **Varieties of coccidioidal infection in relation to the epidemiology and control of the diseases.**—*Amer. J. publ. Hlth*, xxxvi, 12, pp. 1394–1402, 1946.

By a programme of systematically testing with coccidioidin new permanent personnel at four San Joaquin Valley, California, army airfields and periodically re-testing those originally negative, the proportion of the various types of coccidioidomycosis (*Coccidioides immitis*) was ascertained. Of 1,351 infections, 60 per cent. were symptomless and only 25 per cent. were clinically manifest and diagnosed. Erythema nodosum occurred in 4·6 per cent. Care is required, however, in the diagnostic interpretation of this condition, since it is rare in negroes and much more frequent in females (24 per cent.) than in males (4·3). Disseminations occurred in about 1 and 0·25 per cent. of the clinically manifest and total infections, respectively, of white males. In negroes their incidence was over ten times higher (12 and 3·5 per cent., respectively).

720. Smith (C. E.), Beard (R. R.), Rosenberger (H. G.), & Whiting (E. G.). **Effect of season and dust control on coccidioidomycosis.**—*J. Amer. med. Ass.*, cxxxii, 14, pp. 833–838, 3 graphs, 1 map, 1946.

The monthly and yearly rates of coccidioidal infection [*Coccidioides immitis*] were calculated in coccidioidin-negative personnel of four San Joaquin Valley, California, army airfields from 1941 to 1945. The results emphasized the geographical distribution of the endemic area and the importance of dust in the causation of infection. At the most northerly station the annual infection rate was only 0·5 per 100 compared with 20 to 25 at the two southerly fields when dust was uncontrolled. The maximum incidence occurred in the arid, dusty summer and autumn, a single month (August, 1941) providing 5 per cent. of the infections at one station. Grassing or paving roads and runways and the application of highly refined oil to athletic areas reduced the infection rates by one-half to two-thirds.

721. Tucker (H. A.). **The coccidioidin skin test in the Panama Canal Zone. Results of a brief survey in tuberculous and non-tuberculous patients.**—*Calif. Med.*, lxv, 2, pp. 52–53, 1946.

Of 154 coloured patients, including 51 tuberculous, at Gorgas Hospital, Ancon, Canal Zone, skin-tested with coccidioidin from *Coccidioides immitis*, only one, a 60-year-old Barbadian male, reacted positively to the antigen. He was suffering from coronary heart disease, and clinical, laboratory, and X-ray studies yielded no evidence of tuberculosis.

722. Burks (J. W.) & Thompson (P. E.). **Coccidioidomycosis.**—*Sth. med. J.*, xxxix, 8, pp. 613–620, 7 figs., 1946.

The writers describe a case of coccidioidomycosis (*Coccidioides immitis*) from a non-endemic area in a 27-year-old soldier of the United States Army, in whom the disease assumed the rare progressive secondary form. Some of the clinical and immunological features of the case presented analogies with tuberculosis.

723. Pfanner (E. F.). **Coccidioidomycosis at U.S.M.C. Air Station, Mohave, California.**—*Nav. med. Bull., Wash.*, xlvi, 2, pp. 229–236, 1946. [*T.D.B.*, xliii, 674.]

In a group of men given two skin tests for the presence of coccidioidomycosis (*Coccidioides immitis*) at 4½-month intervals at the United States Marine Corps Air Station, Mohave, California, 434 were negative on both occasions, 23 were negative at the first and positive at the second, and seven hospitalized patients reacting negatively to the tests developed a positive response at a later date. None of the men had been in any other known endemic area of the disease for a month before the first test or during the interval between the first and second.

724. Haynes (D. M.) & Hess (W. I.). **Cutaneous test with coccidioidin. Review of the literature and report of a series in Texas.**—*J. Lab. clin. Med.*, xxxi, 12, pp. 1317–1324, 1946.

Following a review of the literature on the cutaneous test with coccidioidin from *Coccidioides immitis*, the authors report on a group of 413 persons at Dallas, Texas, comprising nurses, medical students, and general hospital patients, who were subjected to intracutaneous injections with the antigen. The number of positive reactors within the group was 11 (2·66 per cent.).

725. Cherry (C. B.) & Bartlett (A. G.). **The diagnosis of acute Coccidioides immitis infections.**—*Bull. U.S. Army med. Dep.*, v, 2, pp. 190–193, 1946. [*T.D.B.*, xliii, p. 778.]

The authors issue a warning against the acceptance of the coccidioidin skin reaction as a diagnostic test of active coccidioidomycosis if unsupported by more trustworthy evidence, since persons who have resided in the endemic areas may show a high degree of skin sensitivity to coccidioidin for many years in the absence of infection. The best diagnostic evidence is the presence of *Coccidioides immitis* in the sputum, proved by culture or by inoculation into guinea-pigs. On the other hand, a negative coccidioidin skin reaction need not exclude infection in a very recent case or in severe generalized infection with a condition of anergy. If the coccidioidin and tuberculin tests are both positive, repeated search for the fungus offers the only hope of a correct diagnosis.

726. Arnold (W. T.) & Levy (M. D.). **Coccidioidomycosis treated with penicillin : case report.**—*Sth. med. J.*, xxxix, 8, pp. 609–613, 2 figs., 1946.

Massive doses of penicillin failed to effect a cure in a case of acute coccidioidomycosis (*Coccidioides immitis*) in a 32-year-old male negro at Houston, Texas.

727. Keeney (E. L.). **A protective cabinet for investigators studying Coccidioides immitis and other infectious fungi.**—*Bull. Johns Hopkins Hosp.*, lxxviii, 3, pp. 113–118, 2 figs., 1 diag., 1946.

Particulars are given of the construction and usage of a stainless steel cabinet, fitted with a plate-glass top and viewing panel and two armholes with sleeves, designed for the protection of workers on *Coccidioides immitis*, among whom the incidence of infection is stated to be alarmingly high.

728. Versiani (O.). **Blastomicose sul-americana. Teste cutâneo com coccidioidin.** [South American blastomycosis. Cutaneous test with coccidioidin.]—*Rev. brasil. Biol.*, vi, 2, pp. 211–214, 1946. [English summary.]

At the Faculty of Medicine, Belo Horizonte, Minas Gerais, Brazil, the author

carried out cutaneous tests with coccidioidin (the antigen derived from *Coccidioides immitis*) in 28 cases of South American blastomycosis [*Paracoccidioides brasiliensis*]. In 27 the outcome was definitely negative, while in one mild erythema was present for 72 hours on the positive border-line. These results show that the action of coccidioidin is specific and that there are considerable immuno-allergic differences between coccidioidomycosis and South American blastomycosis.

729. Bobliolo (L.). **Granuloma apical (dentário) por 'Paracoccidioides brasiliensis' (Splendore), Almeida 1929.** [Apical granuloma (dental) caused by *Paracoccidioides brasiliensis* (Splendore) Almeida, 1929.]—*Brasil-med.*, lx, 42–43, pp. 341–342, 1946.

A case of chronic suppurative lymphadenitis (Lutz's disease) in a coloured female, a native of Minas Gerais, Brazil, is described in which the causal organism, *Paracoccidioides brasiliensis*, appears to have entered the system through carious teeth. This is believed to be the first record of such a mode of penetration by the fungus in question.

730. Biocca (E.) & da Silva Lacaz (C.). **Ação 'in vitro' do ácido para-amino-benzóico sôbre o Paracoccidioides brasiliensis e o Actinomyces brasiliensis.** [*In vitro* activity of para-amino-benzoic acid upon *Paracoccidioides brasiliensis* and *Actinomyces brasiliensis*.]—*Arq. Inst. biol., S. Paulo*, xxix, 270, pp. 151–152, 1 fig., 1945. [*B.A.*, xx, No. 15827.]

Para-amino-benzoic acid at 1:1,000 but not at 1:5,000 inhibited *Paracoccidioides brasiliensis* and *Actinomyces brasiliensis* when incorporated into a Sabouraud glucose agar. No inhibition was noted with diasone and some of its congeners in similar conditions at 1:500.

731. Mosto (D.) & Iaricci (V.). **Presentación de uno caso de granuloma por 'Paracoccidioides brasiliensis'.** [Description of a case of granuloma due to *Paracoccidioides brasiliensis*.]—*Rev. Asoc. méd. argent.*, lix, 562, pp. 826–830, 11 figs., 1945. [*T.D.B.*, xliii, 63.]

The authors describe four cases of paracoccidioidal granuloma (*Paracoccidioides brasiliensis*) in Argentina, in two of which the lungs were involved. The disease has only recently been found in Argentina, involvement of the lungs occurring in about 15 per cent. of the cases, as against 95 per cent. for coccidioidal granuloma (*Coccidioides immitis*).

732. Peryassú (D.). **O sistema retículoendotelial na blastomicose brasiliera experimental do Cobaio.** [The reticulo-endothelial system in experimental Brazilian blastomycosis of the Guinea-Pig.]—*Rev. brasil. Biol.*, vi, pp. 265–305, 24 figs., 1946.

This is a detailed, tabulated account of the effects on the reticulo-endothelial system of guinea-pigs of inoculation with the causal organism of Brazilian blastomycosis (*Paracoccidioides brasiliensis*).

733. Ciferri (R.) & Redaelli (P.). **L'impostazione dello studio di alcuni funghi parassiti e patogeni dell' Uomo. (A proposito di una pubblicazione su Histoplasma).** [Preliminary work on the study of some fungi parasitic on and pathogenic to Man. (Concerning a paper on *Histoplasma*.)]—*Mycopathologia*, iii, 3–4, pp. 338–339, 1943. [German and English summaries.]

This is a short critical discussion of Howell's paper on *Histoplasma capsulatum* (*Mycologia*, xxxi, pp. 191–216, 1939) [*R.A.M.*, xviii, p. 456], with special

reference to the possible drawbacks attaching to the systematic study of a highly parasitic fungus as observed only in the saprophytic state in culture media.

734. Saglam (T.). **Histoplasmosis.**—*Schweiz. med. Wschr.*, lxxvi, 45, pp. 1153–1156, 5 figs., 1946. [German.]

There are stated to be only three records of histoplasmosis (*Histoplasma capsulatum*) in Europe, i.e., one each from Austria, England, and Portugal. Full clinical details are given of the first case observed in Turkey, in a 38-year-old merchant. All the forms of therapy tried, including the administration of penicillin, proved unavailing.

735. Para (M.). **Histoplasmosis in Brazil.**—*Amer. J. trop. Med.*, xxvi, 3, pp. 273–292, 16 figs., 1 map, 1946. [*T.D.B.*, xliii, 1169.]

A brief survey of the more important contributions to the study of histoplasmosis (*Histoplasma capsulatum*) is followed by descriptions of five cases of the disease in Brazil, the first of which was reported by E. Villela and the author in 1941 (*Rev. brasil. Biol.*, i, pp. 449–456). All the patients were children, two boys and three girls (all but one coloured or mulatto), their ages ranging from 19 months to nine years. The fungus was also isolated from the lung of a house-dog which had been in close contact with one of the patients, this being the fourth recorded case of natural histoplasmosis in dogs and apparently the first to be directly linked with a human infection.

736. Palmer (C. E.). **Geographic differences in sensitivity to histoplasmin among student nurses.**—*Publ. Hlth Rep., Wash.*, lxi, 14, pp. 475–487, 3 maps, 1946.

Analysis, according to the place of residence, of the histoplasmin reactions of 8,141 student nurses in connexion with a study of early tuberculosis leads to the conclusions that (*a*) geography appears to be a very significant factor in the prevalence of positive reactors; (*b*) an area of high prevalence of positive reactors exists in the eastern-central region of the United States; and (*c*) the frequency of positive reactors decreases, in general, with increasing distance from this area, e.g., from 58·1, 57·8, and 45·4 per cent. in Kansas City, Missouri, Columbus, Ohio, and Kansas City, Kansas, respectively, to 6·8, 5·8, and 4·8 per cent. in San Francisco, California, Denver, Colorado, and Minneapolis, Minnesota, respectively (exclusive of doubtful figures).

737. Davis (H. V.) & Neff (F. C.). **Histoplasmosis in infancy.**—*Amer. J. Dis. Child.*, lxxi, 2, pp. 171–177, 4 figs., 1946. [*T.D.B.*, xliii, 779.]

Two further cases of histoplasmosis (*Histoplasma capsulatum*) are reported from Kansas, bringing the total number on record to 76. The author's patients were both infants, a female of nine and a male of five months. There has been a sharp increase in the incidence of the disease since 1936, especially in Missouri, Michigan, and Tennessee.

738. McLeod (J. H.), Emmons (C. W.), Ross (S.), & Burke (F. G.). **Histoplasmosis. A report of four cases, two in siblings. Histoplasmin test and other diagnostic procedures.**—*J. Pediat.*, xxviii, 3, pp. 275–295, 10 figs., 1 diag., 1946.

A full account is given of two hitherto unreported cases of histoplasmosis (*Histoplasma capsulatum*) in brothers of seven and six years old (the first recorded instance of the disease in siblings), with a briefer review of two others previously described. These four cases, all of which occurred within an eight-mile radius in Loudoun County, Virginia, are regarded as raising important epidemiological considerations. A search for an animal reservoir of infection

in the district was unsuccessful. *Candida albicans* was present in large numbers in the oral lesions and stools of one of the authors' patients. From the two fresh cases reported here *H. capsulatum* was isolated, although neither reacted to histoplasmin, which does not appear to be a suitable diagnostic agent.

739. Kuzma (J. F.) & Schuster (M.). **Histoplasmosis-reticulo-endothelial cytomycosis (report of a case from Wisconsin).**—*Wis. med. J.*, xlv, 6, pp. 591–595, 2 figs., 1946.

A case of histoplasmosis (*Histoplasma capsulatum*) is presented, the first on record for the State of Wisconsin, in a 65-year-old male who spent much time in dog-breeding. The autopsy revealed the involvement of most of the organs.

740. Furcolow (M. L.), High (R. H.), & Allen (Margaret F.). **Some epidemiological aspects of sensitivity to histoplasmin and tuberculin.**—*Publ. Hlth Rep., Wash.*, lxi, 31, pp. 1132–1144, 4 graphs, 1946.

Histoplasmin and tuberculin skin tests and chest X-rays were made on over 17,000 persons, of whom 16,013 were children, in Kansas City, Missouri, to establish the major epidemiological characteristics of sensitivity to the fungal extract [from *Histoplasma capsulatum*]. The percentage of positive histoplasmin reactors among white persons is slightly higher than among coloured, higher among males than females, and higher among non-lifetime than among lifetime residents. The frequency of pulmonary calcification is over twice as high among reactors to histoplasmin alone as to tuberculin alone, while among those reacting to either test there is a marked increase in the condition with advancing age.

741. Mantz (H. L.). **Histoplasmin skin sensitivity and pulmonary calcifications. A review.**—*J. Lancet.*, N.S., lxvi, 4, pp. 100–102, 1946.

Fifteen contributions to the study of histoplasmin (the antigen from *Histoplasma capsulatum*) skin sensitivity in relation to pulmonary calcifications are briefly reviewed.

742. Zwerling (H. B.) & Palmer (C. E.). **Pulmonary calcifications; roentgenographic observations in relation to histoplasmin and tuberculin reactions.**—*Radiology*, xlvii, 1, pp. 59–63, 2 figs., 1946.

In a roentgenographic study of 6,199 student nurses in eight large cities of the United States, 698 instances of pulmonary calcification were observed. It is probable that the established association between this condition and sensitivity to histoplasmin in the central-eastern States is an index of widespread previous infection in a mild form with *Histoplasma capsulatum* or an immunologically related organism. Since tuberculin-positive and histoplasmin-positive calcification are usually indistinguishable, it may be assumed that during the active phase of the infection the roentgenographic appearance of the benign form of histoplasmosis can resemble that of tuberculosis, the final diagnosis of which should therefore be based on a consideration of the tuberculin reaction and the recovery of the tubercle bacillus.

743. Christie (A.) & Peterson (J. C.). **Pulmonary calcification in negative reactors to tuberculin.**—*Amer. J. publ. Hlth*, xxxv, 11, pp. 1131–1147, 2 figs., 1 graph, 1945. [*B.H.*, xxi, 236.]

Of 181 Tennessee children examined, 45 (24·9 per cent.) reacted positively to tuberculin, 133 (73·5) to histoplasmin, and 79 (43·6) harboured pulmonary lesions interpreted as calcifications. Of 36 who responded both to histoplasmin and tuberculin, 20 (55·6 per cent.) suffered from pulmonary calcification,

which was further present in 48 out of 97 (49·5 per cent.) of those reacting positively to histoplasmin. A possible example of a benign infection by *Histoplasma capsulatum* is reported. A study of the chest roentgenograms and the skin sensitivity to histoplasmin of the patients under observation suggests an immunological relationship between a positive reaction to histoplasmin and pulmonary calcification. *Coccidioides immitis*, on the other hand, was excluded as an etiological factor in the condition.

744. Christie (A.) & Peterson (J. C.). **Pulmonary calcification and sensitivity to histoplasmin, tuberculin, and haplosporangin.**—*J. Amer. med. Ass.*, cxxxi, 8, pp. 658–660, 1946. [*B.H.*, xxi, p. 742.]

A study of the chest roentgenograms and the cutaneous sensitivity to histoplasmin and tuberculin of 344 Tennessee children and young adults indicated a correlation between the former reaction and pulmonary calcification. On the other hand, the absence of cutaneous sensitivity to haplosporangin in the same subjects, 53 per cent. of whom were found to have pulmonary calcifications, would seem to exclude *Haplosporangium parvum* as an agent of any significance in the etiology of this condition.

745. Scheff (G. J.). **Biochemical and immunological properties of Histoplasma capsulatum No. 650.**—*Yale J. Biol. Med.*, xviii, 1, pp. 41–54, 1945. [*B.A.*, xx, No. 6966.]

The cultural requirements of *Histoplasma capsulatum* include a simple organic source of carbon, an organic source of nitrogen, and traces of some growth factors. Utilization of glucose by *H. capsulatum* is accompanied by a rise in the pH of the media. Sugar is not essential. Succinate and fumarate increased the growth rate. Growth was retarded in media lacking B_1, nicotinic acid, and in media lacking all vitamins. In immunological studies with polysaccharide and protein fractions from mycelium, the humoral antibody response was slight in old infection, but antibodies of a much higher titre were observed after immunization with either polysaccharide or protein antigens. Positive skin tests were noted in infected rabbits injected intradermally with 0·1 ml. of both the polysaccharide and protein antigens. No skin reaction was obtained in the immunized rabbit with the polysaccharide antigen and only slight response with the protein fraction. It is postulated that induction of skin sensitivity depends on the presence of living organisms in the body. In infections by fungi the antigen is released in amounts insufficient to lead to antibody formation, while parenteral administration of sufficient antigen results in demonstrable antibody formation.

746. Seabury (J. H.) & Artis (Dorothy). **In vitro susceptibility of Histoplasma capsulatum to therapeutic agents.**—*Proc. Soc. exp. Biol., N.Y.*, lxi, 1, pp. 15–16, 1946.

Neoarsphenamine at a concentration of 100 mg. per cent. and stilbamidine at 10 mg. per cent. and upwards prevented the growth of *Histoplasma capsulatum* in five-day-old cultures in heart-brain infusion broth. Three other drugs and two antibiotics, streptomycin and penicillin, were ineffectual for the purpose in view.

747. Tomlinson (W. J.) & Grocott (R. G.). **Canine histoplasmosis. A pathologic study of the three reported cases and the first case found in the Canal Zone.**—*Amer. J. clin. Path.*, xv, 11, pp. 501–507, 5 figs., 1945. [*B.H.*, xxi, p. 587.]

The authors describe the fourth case recorded of naturally acquired histoplasmosis [*Histoplasma capsulatum*] in the dog [*Med. Mycol.*, entries 315,

523; *R.A.M.*, xix, p. 149], which is also the first case on this animal in the Canal Zone and the first record in this area since Darling's discovery of the disease there in 1905–6. No evidence was obtained as to the source of infection, which, however, must have been obtained locally, and may possibly have come from rodents, which the dogs are known to have hunted.

748. Birge (R. F.) & Risen (W. H.). **Canine histoplasmosis. Report of two cases.**—*N. Amer. Vet.*, xxvi, pp. 281–287, 1945. [*V.B.*, xvi, 41.]

Two cases are reported of *Histoplasma capsulatum* in dogs. The wall of the intestine was thickened about twice the normal and the mucosa and submucosa showed diffuse infiltration by numerous reticular cells laden with phagocytosed bodies typical of the yeast form of *H. capsulatum*.

749. Seibold (H. R.). **A case of histoplasmosis in a Dog.**—*J. Amer. vet. med. Ass.*, cix, 834, pp. 209–211, 4 figs., 1946.

A case of spontaneous histoplasmosis (*Histoplasma capsulatum*) in a 2½-year-old bull terrier dog is described and previous literature on the disease briefly reviewed. The diagnosis was made by histological examination.

Since this report was submitted for publication, a second case of the disease has been investigated in a 1½-year-old female sired by the above-mentioned dog, and in this instance a pure culture of the fungus was obtained from the liver and spleen and identified by Dr. C. W. Emmons.

750. MacKinnon (J. E.) & Artagaveytia-Allende (R. C.). **The so-called genus Candida Berkhout.**—*J. Bact.*, xlix, 4, pp. 317–334, 7 figs., 1945. [*R.A.M.*, xxiv, p. 416.]

In these studies at the Institute of Experimental Hygiene, Montevideo, the auxanographic methods of European workers were found to be essential to the correct identification of the 14 species of *Candida* investigated. The existence of true dissociation or hereditary changes in some members of this group is regarded as indisputable.

Of the species discussed *C. krusei* has an ascigerous state referable to the genus *Pichia*, thus resembling *C. pseudotropicalis* with *Saccharomyces fragilis* as its perfect state. *C. intermedia* is considered to be devoid of medical interest. *C. pelliculosa* approximates to *Torulopsis*; *C. flareri* is believed to be a white variant of *Rhodotorula mucilaginosa*; *C. stellatoidea* is considered a valid species; *Neogeotrichum pulmoneum* (*Oidium brasiliense*) is thought to be identical with *C. suaveolens*; and *C. brumpti* is maintained as distinct from *C. parakrusei*.

Conant's claim that *Syringospora* was the first validly published name for yeasts of this group is accepted.

751. Schopfer (W. H.). **Les facteurs de croissance pour quelques espèces de Candida et de Torulopsis (biotine, aneurine, mésoinositol). La biosynthèse de la lactoflavine.** [The growth factors for some species of *Candida* and of *Torulopsis* (biotin, aneurin, mesoinositol).]—*C.R. Soc. Phys. Hist. nat. Genève*, lxi, 2, pp. 147–152, 1944. [Received March, 1946.]

Vitamin H (biotin) was experimentally shown to be an essential growth factor for *Candida guilliermondi*, *C. albicans*, *C. tropicalis*, and *Torulopsis candida* in pure culture on a synthetic medium, while vitamin B (aneurin) was complementary for the three first-named; in the case of *T. laurentii* vitamin B was essential, biotin and inositol complementary. *C. guilliermondi* var. *nitratophila* Diddens & Lodder, unlike the type species, was completely auxoautotrophic. Flavinogenesis in *C. guilliermondi* was promoted by glucose,

levulose, and saccharose in the presence of asparagin or glycocol; the intensity of pigmentation was reduced by an increase in the asparagin dosage from 1 to 8 p.p.m.

752. Schopfer (W. H.). **Les besoins en facteurs de croissance de 23 espèces et variétés du genre Candida. La production de lactoflavine.** [The growth factor requirements of 23 species and varieties of the genus *Candida*. The production of lactoflavin.]—*C.R. Soc. Phys. Hist. nat. Genève*, lxi, 3, pp. 232–236, 1944. [Received March, 1946.]

The 23 species and varieties of *Candida* studied on a synthetic asparagin- and glucose-containing medium enriched with supra-optimal quantities of vitamin B (aneurin) and vitamin H (biotin), viz., 1 and 0·06γ, respectively, per 25 c.c., fell into four groups, namely, (1) requiring both growth factors, each of which was inactive alone (synergism); (2) H alone active, B alone inactive (no synergism); (3) B alone active, H almost or entirely inactive (no synergism); (4) auxo-autotrophic and semi-auxo-autotrophic. Small amounts of lactoflavin were produced by a number of species.

753. Benedetti (G.). **La Mycocandida pseudotropicalis (Cast.) Cif. et Red. Studio sperimentale su le caratteristiche morfologiche, colturali, biochimiche, e patogenetiche del micete.** [*Mycocandida pseudotropicalis* (Cast.) Cif. & Red. An experimental study of the morphological, cultural, biochemical, and pathogenic characters of the fungus.]—*Mycopathologia*, iii, 3–4, pp. 262–279, 1 pl., 4 figs., 2 graphs, 1943. [German summary.]

Studies are described on the morphological, cultural, biochemical, and pathogenic characters of a strain of *Mycocandida* [*Candida*] *pseudotropicalis* isolated from a case of broncho-pneumomycosis in a young female. The author prefers to maintain the generic term *Mycocandida* because it still seems to him the most acceptable, as no international agreement seems possible as between this name, *Candida* (favoured by the Dutch workers), *Mycotorula*, proposed by the Italians, and *Syringospora*, preferred by yet others. He assigns his fungus to its particular species because fermentation of lactose is a constant character.

754. Benedek (T.). **Are fermentation tests and biochemical characteristics reliable in the differentiation of Monilias?**—*Mycopathologia*, iii, 3–4, pp. 346–353, 1943.

Six species of *Monilia* [*Candida*] isolated by Castellani and kept in stock culture for several decades, namely, *C. krusei*, *C. pinoyi*, *C. tropicalis*, *C. pseudotropicalis*, *C. macedoniensis*, and *C. metalondinensis*, were found by the author to show biochemical characters identical with those originally described for them, whereas other strains, freshly isolated from the oral cavity, after being kept in stock culture for 14 months, revealed essential changes in their biochemical characters. It is concluded that the fermentation reactions cannot afford a solid foundation for the classification of the group.

755. Wickerham (L. J.). **A critical evaluation of the nitrogen assimilation tests commonly used in the classification of yeasts.**—*J. Bact.*, lii, 3, pp. 293–301, 2 figs., 1946.

The ability of yeasts to utilize ammonium sulphate, urea, asparagin, and peptone has served for the past 12 years as a criterion for their classification [*R.A.M.*, xiv, p. 192]. The author's studies at the Northern Regional Research Laboratory, Peoria, Illinois, have demonstrated that nine species previously designated as incapable of assimilating the first three compounds, viz., *Candida pelliculosa*, *C. zeylanoides*, *Kloeckera africana*, *K. brevis*, *K. lindneri*, *Torulopsis*

dattila, *T. fermentans*, *T. molischiana*, and *T. stellata*, can do so on the addition to a modification of Lodder's medium of an adequate supply of pure vitamins. Of these, *C. pelliculosa* proved to be independent of an exogenous vitamin supply, while some growth was also made on the unfortified medium by *C. zeylanoides*, *T. fermentans*, and *T. molischiana*.

Urea proved to be toxic to nine out of ten species of *Candida* at 0·092 per cent., at which concentration only *C. flareri* continued to grow; all developed normally in the presence of 0·046 per cent.

756. Muster (Irène). **Contribution à la diagnose de Candida albicans.** [Contribution to the diagnosis of *Candida albicans*.]—*Dermatologica*, xci, 2–3, pp. 101–107, 3 figs., 1945. [German and English summaries.]

The diagnosis of *Candida albicans* as an agent of fungal infection is commonly based on the fermentation of glucose and maltose on the one hand, and the demonstration of typical chlamydospores on the other. Both these criteria, however, are open to criticism, and the following alternative method is therefore proposed. The intravenous injection of a suspension of the fungus into a 1½-kg. rabbit results in the death of the animal in three to five days; the internal organs are covered with numerous abscesses, of which the superficially confluent ones below the renal capsule are particularly characteristic. The organism can be reisolated from all the lesions.

757. Fuentes (C.). **A method for differentiating Candida albicans in tissue.**—*J. Bact.*, li, 2, pp. 245–246, 1946.

A simple and rapid technique has been devised at the University School of Medicine, Havana, Cuba, for the differentiation of *Candida albicans* in tissue. It consists merely in staining the intracellular fat of the parasite with Sudan IV dissolved in lactic acid and counterstaining the tissue harbouring the fungus with toluidine blue.

758. Anderson (Phyllis). **A laboratory study of Monilia albicans.**—*Med. J. Aust.*, xxxiii, 2, pp. 57–59, 1946.

Monilia [*Candida*] *albicans*, grown on a maize meal extract with Congo red, can be easily identified by the formation of mycelium and chlamydospores. Of eight substances tested, merthiolate proved an effective *in vitro* bacteriostatic agent against *C. albicans*. The fungus was shown to be pathogenic to the rabbit, an intravenous injection resulting in a moribund condition in 72 hours. Of patients suffering from vaginal mycosis at least half have been shown to harbour the same organism in the intestinal canal.

759. Callar (D.). **Moniliasis.**—*Dent. Dig.*, li, 8, p. 439, 1945.

A note is given on the symptomatology, diagnosis, and therapy of thrush (*Monilia* [*Candida*] *albicans*), with special reference to the liability of confusion between this trouble and allergy to denture base materials.

760. Salazar Leite (A.) & Horta (J.). **Resultados de inoculações a animais de laboratório de estirpes de fungos leveduriformes.** [Results of inoculation with strains of yeast-like fungi on laboratory animals.]—*An. Inst. Med. trop.*, ii, pp. 141–147, 8 figs., 1945. [French and English summaries.]

Details are given of the histopathology of laboratory animals inoculated with strains of *Candida* isolated from cases of broncho-pulmonary mycosis in Lisbon. The two microscopic forms assumed by the yeasts in the tissues are believed to correspond to blood eosinophilia and haemoptysis in human subjects.

761. Geiger (A. J.), Wenner (H. A.), Axilrod (H. D.), & Durlacher (S. H.). **Mycotic endocarditis and meningitis : report of a case due to Monilia albicans.**—*Yale J. Biol. Med.*, xviii, 4, pp. 259–268, 7 figs. (2 col.), 1946.

A fatal case of mycotic endocarditis and meningitis caused by *Candida albicans* in an 18-year-old girl patient at the New Haven (Connecticut) Hospital is fully reported, together with observations on the cultural characters of the fungus and its effects on rabbits, and details of the autopsy.

762. Morris (A. A.), Kalz (G. G.), & Lotspeich (E. S.). **Ependymitis and meningitis due to Candida (Monilia) albicans : report of a fatal case of meningitis, with comment on its clinical, bacteriologic, and pathologic aspects.**—*Arch. Neurol. Psychiat., Chicago*, liv, 5, pp. 361–366, 2 figs., 1945. [*B.H.*, xxi, 664.]

Candida albicans was isolated from the cerebrospinal fluid, ependymal and subarachnoid exudates, a thrush-like exudate on the tongue, and the pus of a dental abscess in a 23-year-old male French-Canadian, whose clinical record included symptoms pointing to a condition of internal hydrocephalus. This is the third authentic published case of meningitis, and it presents many symptomatological and pathological analogies with that described by Miale [*Med. Mycol., 1944*, No. 115].

763. Halpert (B.) & Wilkins (H.). **Mycotic meningitis due to Candida.**—*J. Amer. med. Ass.*, cxxx, 14, pp. 932–934, 5 figs., 1946. [*B.H.*, xxi, 514.]

This is a full report of a fatal case of meningitis (*Candida ? albicans*) in a 25-year-old male negro at Oklahoma City. It is stated to be only the third recorded instance of meningeal involvement by a species of *Candida*, and the first in which infection was localized in the central nervous system.

764. Bhat (J. V.) & Shetty (M. V.). **An instance of the occurrence of Monilia albicans (Candida albicans) in dental caries.**—*Curr. Sci.*, xv, 8, pp. 228–229, 1946.

While the authors assign no etiological role to the fungus, they report that *Candida albicans* has once been isolated from a dental caries of a molar in the third degree of decay. There appears to be no other record of a *Candida* species found within the pulp of a tooth, as in this case, or even associated with dental decay. When the organism was at first isolated, it exactly resembled a yeast, but a dry, well-developed, dendroid mycelium with chlamydospores subsequently appeared.

765. Bartels (H. A.) & Buchbinder (M.). **The isolation of Candida albicans from a root canal undergoing penicillin therapy.**—*J. dent. Res.*, xxiv, 6, pp. 315–317, 1 fig., 1946.

Candida albicans was isolated in three successive cultures from the root canal of an upper right first incisor tooth in a 31-year-old woman in New York. The fungus proved resistant to penicillin therapy, but a dressing of metapheneugenol relieved the symptoms.

766. Wetterqvist (Y.). **Ett fall av primär pneumonomykos med ovanlig etiologi.** [A case of primary pneumonomycosis of unusual etiology.]—*Nord. Med.*, xxx, 19, pp. 1069–1071, 4 figs., 1946. [English summary. *B.H.* xxi, 514.]

The author describes a case of pneumonomycosis caused by *Candida krusei* and disputes the contention that *Monilia* [*C.*] *albicans* is the only specie among the yeast-like fungi that is pathogenic to man.

767. Hiatt (J. S.) & Martin (D. S.). **Recovery from pulmonary moniliasis following serum therapy.**—*J. Amer. med. Ass.*, cxxx, 4, pp. 205–206, 4 figs., 1946. [*B.H.*, xxi, 437.]

A 44-year-old female patient at the Duke Hospital, Durham, North Carolina, presented evidence of an excess of antigen in the tissue and absence of circulating antibodies. Conventional methods of therapy gave negative results, but complete recovery was effected by the subcutaneous administration of serum from rabbits immunized against the agent of moniliasis [*Candida*], beginning with 0·1 c.c. of a 1 in 10 dilution and increasing by the same amount daily until a dose of 0·9 c.c. was reached. The desensitization series was repeated twice.

768. Keeney (E. L.). **Sodium caprylate. A new and effective treatment for moniliasis of the skin and mucous membranes.**—*Bull. Johns Hopkins Hosp.*, lxxviii, 6, pp. 333–339, 1 fig., 1946.

Details are given of the successful treatment of a small number of patients affected by various types of moniliasis (*Candida albicans*) at Baltimore, Maryland, by sodium caprylate used as a 20 per cent. aqueous solution or in ointment, jelly, or powder form at 10 per cent.

769. Gutmann (G. E.). **Enteritis caused by Salmonella suipestifer with secondary moniliasis.**—*Arch. Path.*, xli, 5, pp. 540–547, 1 fig., 1946.

Candida albicans was shown by a post-mortem examination to have been associated with severe oesophagitis, gastric ulceration, and duodenitis in a 60-year-old female patient at the Peter Bent Brigham Hospital, Boston, Mass., who succumbed to septicaemia caused by *Salmonella suipestifer*. The fungus is thought to have been a secondary invader, the existence of which was unsuspected during life.

770. Wespi (H. J.). **Vulvovaginitis durch Soorpilze.** [Vulvovaginitis caused by thrush fungi.]—*Praxis*, xxxiv, 47, pp. 671–673, 2 figs. 1946.

Evidence is adduced from the author's practice near Berne, Switzerland, and the relevant literature that vulvovaginitis (*Monilia* [*Candida*] *albicans*) is more widespread than has generally been supposed. Treatment with 20 per cent. borax glycerine is recommended.

771. McIlrath (Muriel B.). **Monilial vaginitis: a report of 58 cases.**—*Med. J. Aust.*, xxxiii (ii), 2, pp. 54–56, 1946.

Fifty-six cases of monilial vaginitis in pregnant and two in non-pregnant women attending a leucorrhoea clinic are reported on. In 39 cervical disease was found, and in only three was the cervix described as normal. The stools of 35 pregnant and two non-pregnant women gave positive cultures for *Monilia* [*Candida*]. Only one had *Candida* in the vagina, and in her case it was also found in the stools. The remainder had various forms of pelvic inflammation and persistence of the cervical condition noted during cyesis. Suppositories of merthiolate (1 in 1,000) were found to be the most satisfactory form of treatment.

772. Meyer (Esther) & Ordal (Z. J.). **Pathogenicity of Candida species for the chick embryo.**—*J. Bact.*, lii, 5, pp. 614–615, 1946.

The results of experiments at the College of Medicine, Chicago, to determine the pathogenicity of *Candida* spp. to the chick embryo showed that *C. albicans* and *C. stellatoidea* caused the development of lethal lesions on the chorio-

allantoic membrane; *C. tropicalis* was responsible for milder injuries, which were fatal, however, to about half the embryos tested; while *C. krusei* and *C. parakrusei* were non-pathogenic.

773. Cochet (G.). **Résultats statistiques sur la flore mycologique intestinale de quelques rongeurs de la faune de France.** [Statistical results on the intestinal mycoflora of some rodents of the French fauna.]—*Ann. Parasit. hum. comp.*, xxi, 3–4, pp. 169–176, 1946.

Detailed statistical results are given of several years' studies on the intestinal mycoflora of 122 rodents of the French fauna belonging to the Leporideae, Sciurideae, Muscardinideae, Murideae, and to the imported family of the Capromyideae. Included in the 198 isolates were 14 species or varieties distributed among six genera of the Thallosporeae, of which *Geotrichum candidum* was the most common, occurring in 82 of the animals examined. *Rhodotorula mucilaginis* var. *plicata* and *Saccharomycopsis guttulatus* are of interest as being restricted to domesticated rodents. All the five species of *Candida* encountered, viz., *C. albicans*, *C. krusei*, *C. guilliermondi*, *C. parakrusei*, and *C. brumpti*, are considered to be pathogenic to their respective hosts, and the two last-named are reported for the first time from animals.

774. Kunstadter (R. H.), Pendergrass (R. C.), & Schubert (J. H.). **Bronchopulmonary geotrichosis.**—*Amer. J. med. Sci.*, ccxi, 5, pp. 583–589, 6 figs., 1946. [*B.H.*, xxi, 664.]

A case is reported of chronic bronchopulmonary disease in a 22-year-old coloured soldier in the Army of the United States associated with a species of *Geotrichum*, isolates of which from the sputum produced on Sabouraud's agar in 24 to 48 hours small, white, fuzzy, adherent colonies and in ten days a radiating giant growth with abundant coremia. The septate mycelium gave rise to both arthrospores and chlamydospores. Gelatine and litmus milk were liquefied and acid was formed from dextrose, maltose, sucrose, and lactose. The fungus was isolated from the sputum of two other recent cases of chronic respiratory tract disease.

775. Hage (T. J.). **Saccharomycopsis guttulatus. I. Pathogenicity for young rabbits.**—*Amer. J. vet. Res.*, vi, pp. 117–119. [*V.B.*, xvi, p. 259.]

In a feeding experiment with spore and vegetative forms of *Saccharomycopsis guttulatus* on four young rabbits, increasing numbers of spores appeared in the faeces of all four three days after inoculation, and all showed symptoms of mucoid enteritis, from which two died and two recovered. Post-mortem findings included nephritis and enteritis with large numbers of spores of *S. guttulatus* in the intestinal contents. This fungus may be a contributory factor in the occurrence of mucoid enteritis of rabbits.

776. Vidari (E.). **Granulomatosi sperimentali da specie del genere Monosporium.** [Experimental granulomatoses caused by species of the genus *Monosporium*.] —*Mycopathologia*, iii, 3–4, pp. 225–239, 1 pl., 1943. [German and English summaries.]

Inoculations of rabbits, guinea-pigs, and pigeons with Tarozzi's strain of *Monosporium apiospermum* [*Allescheria boydii*] did not result in any specific disease when only one inoculation was made, even at a high dosage, but repeated inoculations of the rabbit with small doses gave rise to lesions in the lungs. The author concludes that the strain of the fungus used in his experiments is only weakly parasitic. The pathogenesis of the disease in the few cases of human infection recorded would appear to depend on certain conditions

of equilibrium between the fungus and the host tissues that are brought about only with difficulty, and which result in a circumscribed condition of disease with possible general allergic manifestations.

777. Ciferri (R.) & Redaelli (P.). **Sulle affinità e sulla posizione sistematica dei generi Madurella e Indiella.** [On the affinity and systematic position of the genera *Madurella* and *Indiella*.]—*Mycopathologia*, iii, 2, pp. 182–202, 4 figs., 1941. [English and Spanish summaries. Received October, 1946.]

The so-called 'grains' of maduromycosis are held to be equivalent, on the basis of their morphological structure, to the sclerotia of such Mycelia sterilia as *Sclerotium* and *Rhizoctonia*, *Madurella americana*, and probably other species of the same genus are provisionally referred to the Basidiomycetes by reason of the clamp-connexions formed on certain natural culture media. Their affinities would appear to lie among the Autobasidiomycetes, e.g. *Hypochnus* and *Corticium*.

The following subdivisions of the genus *Madurella* are proposed: (1) *Eumadurella* nob., with different-coloured (mostly black) grains in living tissues and in culture; (2) *Pseudomadurella* nob., with black or dull grains in living tissues only; (3) *Rubromadurella* (Tal.) nob., with red or purplish grains in living tissues only; and (4) *Indiella* (Brumpt) nob., with white or bright-coloured grains in living tissues only.

An analytical key of the species accepted on the basis of these proposals, including *Glenospora khartoumensis* (renamed *M. khartoumensis*), is presented.

778. Twining (H. E.), Dixon (H. M.), & Weidman (F. D.). **Penicillin in treatment of Madura foot : report of two cases.**—*Nav. med. Bull., Wash.*, xlvi, 3, pp. 417–429, 8 figs., 1946. [*T.D.B.*, xliii, 674.]

The authors describe two cases of mycetoma, one of seven years' duration caused by *Monosporium apiospermum* [*Allescheria boydii*], the other of two years' duration due to *Cephalosporium granulomatis* Weidman & Kligman. In the former, some of the bones of the tarsus and metatarsus were involved and penicillin treatment (3,7000,000 followed by 2,100,000 units) having proved ineffectual the foot was amputated. Infection in the second case was confined to the soft tissues, and rapid, apparently permanent improvement resulted from the administration of 2,300,000 units of penicillin.

779. Van der Sar (A.) & Hartz (P. H.). **Mycetoma pedis. Case report.**—*Amer. J. clin. Path.*, xvi, 2, pp. 129–138, 9 figs., 1946.

A case of mycetoma pedis of 18 years' standing in a 42-year-old male negro is reported from Curaçao, Netherlands West Indies. Histologic examination revealed the presence of true fungi, but cultures remained sterile.

780. Weidman (F. D.) & Kligman (A. M.). **A new species of Cephalosporium in Madura foot (Cephalosporium granulomatis).**—*J. Bact.*, i, 5, pp. 491–495, 3 figs., 1945. [*T.D.B.*, xliii, 778.]

Cephalosporium granulomatis n. sp., isolated from a case of Madura foot, a further account of which is in preparation for publication elsewhere, is characterized by hyaline, sparsely septate hyphae, erect, non-septate, simple conidiophores, 14 to 28 by 0·5 to 1·5μ, and globose spore heads, 5 to 11μ, composed of 6 to 24 ovoid, elliptical, or obovate conidia of varying shapes, 2·8 to 3·5 by 0·7 to 1·3μ, germinating at one or both poles. Short, spiny, or woolly, white coremia are formed in profusion on all substrata, but chlamydospores develop only in blood media at 37° C. On 4 per cent. glucose agar the mature colonies are deep grey or tan, moist or waxy, with radial folds in the central region

extending almost to the periphery as shallow furrows. A single sector arising in the cultures on this medium is rose-coloured apart from a central disk of white coremia and without radial folds.

The fungus was non-pathogenic to white rats, nor did it invade the chorio-allantoic membrane of the chick.

781. Simões Barbosa (F. A.). **Concerning a new Hyphomycete parasite of Man: Cephalosporium cordoniformis n. sp.**—*Mycopathologia*, iii, 2, p. 93, 1941. [Received October, 1946.]

English and Latin diagnoses are given of *Cephalosporium cordoniformis* n. sp., the agent of human onychomycosis in São Paulo, Brazil.

782. Simões Barbosa (F. A.). **'Hyalopus spinosus' (Negroni, 1933) e 'Hyalopus cordoniformis' (S. Barbosa, 1941), duas espécies distintas (Hyphomycetales, Mucedinaceae).** [*Hyalopus spinosus* (Negroni, 1933) and *Hyalopus cordoniformis* (S. Barbosa, 1941), two distinct species (Hyphomycetales, Mucedinaceae).]—*Rev. brasil. Biol.*, v, 4, pp. 577–580, 2 figs., 1945. [English summary.]

The author takes exception to Negroni's relegation of *Hyalopus* (*Cephalosporium*) *cordoniformis* S. Barbosa, 1941 to synonymy with *H.* (*C.*) *spinosus* Negroni, 1933 (P. Negroni, Dermatomicosis, Buenos Aires, 1942). Both fungi were isolated from the nails. Among the differences regarded as justifying specific differentiation are the following. The colonies of *H. spinosus* on Sabouraud's medium are dirty white, whitish-yellow, or white to ashen, slightly plicate, diffusing a pigment that darkens the substratum, whereas those of *H. cordoniformis*, white at first, soon acquire a pink tinge at the centre, are deeply grooved, and secrete no pigment; *H. spinosus* produces short, spiniform elements on all the solid media used, but was never observed to produce the twists or strings characteristic of *H. cordoniformis*; *H. spinosus* evolves acid from glucose, maltose, and raffinose, which were not assimilated by *H. cordoniformis*.

783. Chaudhuri (H.), Singh (B.), & Thind (K. S.). **A note on the life-history and the systematic position of Rhinosporidium seeberi (Wernicke).**—*J. Indian bot. Soc.*, xxiv, 1, pp. 4–9, 1 pl., 11 figs., 1945.

A study is reported of rhinosporidiosis on the cow, bullock, and pony, from material obtained from various localities in the Central Provinces, India. The nasal polypi, faeces, and nasal excretions were examined in detail and showed that the causal organism, *Rhinosporidium seeberi*, starts its life-history as a small, spherical, oval, or oblong body measuring 5 to 9μ in diameter, enters a period of very active growth, in which it becomes perfectly oval and measures 91 to 130 by 74 to 78μ, and then shows very active mitotic division of the nucleus. Cytoplasmic division next sets in, the young sporangia ranging from 110 to 187 by 110 to 156μ and the spores from 3 to 4μ in diameter. The fully ripe sporangia measure 400 to 500 by 400μ and the spores attain a diameter of 6 to 9μ. At any point the sporangial wall may protrude out into a beak, which later breaks, a pore being formed through which the spores are discharged. Many spores from which blunt processes were seen to arise in all stages of development were observed, the amoeboid structures so formed being apparently the germinating spores of the fungus. This observation indicates the affinity of *R. seeberi* with the Chytridiales.

784. Prieto (D.) & Pires (A.). **A propósito de la rhinosporidiosis. Presentación de un caso en un Caballo.** [Concerning rhinosporidiosis. A case of rhinosporidiosis in a Horse.]—*Gac. vet., B. Aires*, vi, pp. 323–336, 1944. [*V.B.*, xvi, 97.]

A second case of equine rhinosporidiosis [*Rhinosporidium seeberi*] is recorded

for Argentina, the first record occurring on an imported animal. The growth was removed but recurred in six months.

785. Johnson (E. A.). **An improved slide culture technique for the study and identification of pathogenic fungi.**—*J. Bact.*, li, 6, pp. 689–694, 1 fig., 2 diags., 1946.

An improved slide-culture technique is described for the study and identification of human and animal pathogenic fungi, e.g., the ringworms, *Microsporum audouini* and *M. canis*, in which special provision is made for the exclusion of contaminants. Potato dextrose agar prepared according to a prescribed method is recommended for use with this culture method, and a technique is also described for making permanent stained mounts preserving intact the morphological features of the fungus.

786. Leise (J. M.) & James (L. H.). **Isolation of dermatophytes ; a new procedure for use in the presence of saprophytic fungi, especially in mixed cultures and from leather.**—*Arch. Derm. Syph., N.Y.*, liii, 5, pp. 481–495, 3 figs., 1946.

Sabouraud's dextrose agar medium, adjusted to pH 10·5, was found to be superior to the ordinary substratum of the same composition for the isolation of the dermatophytes commonly occurring on shoes and floors, viz., *Epidermophyton floccosum*, *Trichophyton interdigitale*, *T. purpureum*, *T. mentagrophytes*, *T. rubrum*, *T. sulphureum*, *T. gypseum*, and *Microsporum lanosum*, in the presence of the rapidly growing saprophytes, *Aspergillus niger*, *Rhizopus nigricans* [*R. stolonifer*], and two unnamed species of *Penicillium*. The medium should be incubated for 5½ to 6 days at 34° C. for best results.

787. Sautet (J.), Ranque (J.), & Vuillet (J.). **A propos des variations morphologiques microscopiques des dermatophytes cultivées sur lames dans des conditions biologiques apparemment identiques.** [Concerning the microscopic morphological variations in dermatophytes cultivated on slides under apparently identical biological conditions.]—*C.R. Soc. Biol., Paris*, cxl, 17–18, pp. 653–654, 1946.

In over 200 agar-slide cultures of *Microsporum felineum*, *Trichophyton soudanense*, and *A*[*chorion*] *gypseum*, the writers observed the development of striking morphological variations without any corresponding change in the environmental conditions. For instance, an isolate of *A. gypseum* hitherto producing few spindles (macroconidia) suddenly gave rise to large numbers of these organs, the morphology of which was also unstable in respect of fragmentation and truncation. Comparable 'spontaneous' modifications were further observed in the number of microconidia, 'tendrils', and 'hooks', and in mycelial septation. The causes of these inconsistencies are still obscure.

788. Zach (F.). **Über die Entwicklung von Trichophyton gypseum asteroides Sabouraud auf natürlichen Nährböden.** [On the development of *Trichophyton gypseum asteroides* Sabouraud on natural substrata.]—*Öst. bot. Z.*, xci, 2–3, pp. 168–183, 6 figs., 1942. [Received August, 1946.]

Trichophyton gypseum asteroides [*T. asteroides*], transferred direct from human or animal substrata to artificial media, makes only scanty growth on the latter, presumably owing to the operation of inhibitory tendencies acquired during the parasitic phase of the fungus. The organs referred to as 'spores' in medical literature are not conidia but the rudiments of conidia-bearing lateral branches. The conidia are rounded, 3 to 4·5μ in diameter, or oval, 4·3 by 2·2 to 7·6 by 6·5μ. They are easily detached from the conidiophore and

are so profuse as to give the culture a powdery appearance. Such conidia germinate on fresh media. The spindles are regarded as a kind of chlamydospore, and in hanging-drop cultures all stages between typical spindles and hyphae can be observed. Besides these, there are also round or oval, thick-walled, unicellular, terminal or intercalary chlamydospores. The 'nodules' represent the elements of perithecia. The latter are spherical, dark brown, 32 to 43·5μ in diameter, and furnished with appendages measuring 369 to 499μ in length. The fungus is in all probability referable to the Gymnoascaceae.

789. Ariyevich (A. M.) & Pentkovskaya (Mme V. N.). **The diagnosis and clinical course of mycoses produced by the fungus Epidermophyton (Trichophyton) rubrum.**—*Urol. cutan. Rev.*, l, 3, pp. 146–150, 1946.

A full account is given of the authors' clinical and mycological studies on epidermophytosis of the foot caused by *Trichophyton rubrum* in the U.S.S.R., together with observations on the differential diagnosis of the condition, animal inoculations, and therapy. *Epidermophyton* Kaufmann-Wolf was the agent of epidermophytosis in 504 out of 533 cases (94·5 per cent.) investigated between 1939 and 1941, *T. rubrum* being responsible for 17 (3·2) and *E. inguinale* [*E. floccosum*] for 12 (2·3).

790. Laymon (C. W.). **Kerion ; a review.**—*Minn. Med.*, xxix, pp. 137–142, 2 figs., 1946. [*B.A.*, xx. No. 15834.]

The clinical features, methods of examination, culture of the causal fungi, histopathology, allergic phenomena, and treatment of kerion (due chiefly to *Trichophyton gypseum*, *T. crateriforme*, *T. niveum*, *Microsporum lanosum*, *M. audouini*, and *M. fulvum*) are described. The disease occurs chiefly in persons occupied in farming and dairying.

791. Rothman (S.), Smiljanic (Adelaide M.), & Weitkampf (A. W.). **Mechanism of spontaneous cure in puberty of ringworm of the scalp.**—*Science*, civ, 2636, pp. 201–204, 1946.

The common observation of the spontaneous cure, with the onset of puberty, of tinea capitis (*Microsporum audouini*) is attributed to the secretion at this period of a sebum containing higher concentrations than those present in childhood of normal, aliphatic, monobasic acids with odd numbers of carbon atoms, including pelargonic acid, which exert a strongly fungistatic and fungicidal action on the pathogen. The substance of these studies has already been noticed from another source [cf. entry 614].

792. Herrmann (F.), Behrendt (H.), & Karp (Florentine L.). **On the acidity of the surface of the scalp and other areas of the skin in children.**—*J. invest. Derm.*, vii, 5, pp. 215–226, 11 graphs, 1946.

Studies of the pH of 142 children with ringworm of the scalp (*Microsporum audouini*) showed average readings of pH 4·5 in each of the three age groups above two years, and 4·3 in the under two-year group, compared with an average of 4 in normal children. In the one adult female examined *M. lanosum* was the agent of severely inflamed scalp, neck, and trunk lesions, and here again there was a high pH on the outwardly normal scalp areas before the institution of treatment. Encouraging results were given by the application to the infected areas of trimethyl cetyl ammonium pentachloride ('TCAP') in a buffered solution of propionic and citric acids (pH4), as well as by the regular prophylactic use of an acidified detergent shampoo on exposed but non-infected children.

793. Heisel (E. B.). **Dermatology and syphilology.**—*Ohio J. Sci.*, xlvi, 4, pp. 188–191, 1946.

In this contribution to a symposium on the recent advances in medical science, it is stated that the epidemic of ringworm (*Microsporum audouini*) has spread from the eastern United States to the mid-west and for 18 months has affected the State of Ohio. In contrast to *M. lanosum*, *M. audouini* induces almost no inflammatory response and is most resistant to local therapy. Wood's light is an indispensable diagnostic tool. Control is by temporary epilation by means of X-ray.

794. Pinkus (H.). **Ringworm of the scalp caused by Microsporon audouini in Monroe County.**—*J. Mich. med. Soc.*, xliv, 8, pp. 823–826, 1 map, 1945.

Particulars are given of the course of an epidemic of scalp ringworm caused by *Microsporum audouini* in Monroe County, Michigan, since its inception in negro twins in 1942. The oldest patient was nearly 16, and the ratio of boys to girls was 26:7. Epilation by Roentgen rays was found to be the most effective treatment.

795. Schwartz (L.), Peck (S. M.), Botvinick (I.), Leibovitz (A. L.), & Frasier (Elizabeth S.). **Control of ringworm of the scalp among school children in Haggerstown, Md., 1944–1945.**—*J. Amer. med. Ass.*, cxxxii, 2, pp. 58–62, 1946.

The two most effective remedies against ringworm of the scalp (caused with only a few exceptions by *Microsporum audouini*) tested in an epidemic involving 565 out of 8,657 school children (479 boys and 86 girls) at Haggerstown, Maryland, in 1944–5 were (1) 5 per cent. salicyanilide in carbowax 1500 and (2) a saturated solution of copper undecylenate in carbowax 1500. Barbers' implements, especially electric clippers, are believed to have been the principal source of infection; they can be sterilized by ten seconds' working during immersion in petroleum oil (with a boiling-point of 150° to 200° C.) at 100°.

796. Lewis (G. M.), Hopper (Mary E.), & Reiss (F.). **Ringworm of the scalp. Clinical data on recent cases; experiences with local endocrine therapy.**—*J. Amer. med. Ass.*, cxxxii, 2, pp. 62–65, 1 graph, 1946.

In a two-year clinical and laboratory study in New York on 312 patients with tinea capitis, caused by *Microsporum audouini* in 275, *M. lanosum* in 30, *Trichophyton sulphureum* in 5, and *Achorion schoenleini* in 2, infection reached a peak at the age of eight. *M. audouini* involved the glabrous skin in 18 cases, in only three of which was the hair simultaneously infected. Roentgen therapy is still regarded as the most effective form of treatment, having been responsible for 90 per cent. of the cures in this series. Some of the oestrogenic and androgenic hormones tested showed fungistatic capacity *in vitro* but gave disappointing clinical results.

797. Goodman (J. M.). **Tinea capitis in an adult.**—*Arch. Derm. Syph., N.Y.*, liii, p. 185, 1946.

An infection of the scalp by *Microsporon lanosum* in an American housewife aged 38 is reported from Boston, United States.

798. Duncan (J. T.). **Tinea pedis (athlete's foot).**—*Mon. Bull. Minist. Hlth*, v, pp. 76–80, 1946. [*B.H.*, xxi, 586.]

As a result, probably, of large-scale troop movements, *Trichophyton rubrum* [*R.A.M.*, xix, p. 560; xxii, p. 22] (commonly associated, together with *T.*

gypseum [ibid., xxi, p. 139] and *Epidermophyton floccosum* [ibid., xxi, p. 525], in cases of 'tinea pedis') seems to be spreading from the Far East to all parts of the western hemisphere. Isolation of the fungus presents difficulty, chiefly owing to the presence of contaminating moulds and bacteria, but these troubles may be largely overcome by using potassium tellurite or penicillin to inhibit bacterial growth and by adjusting the medium to pH 10·5 to discourage moulds.

799. González Ochoa (A.) & Vázquez (B. R.). **Dermatofitos causantes de tiña de la piel cabelluda en la ciudad de México.** [Dermatophytes causing ringworm in Mexico City.]—*Rev. Inst. Salubr. Enferm. trop.*, vi, 3, pp. 145–148, 1945. [*B.A.*, xx, No. 10687.]

Of 268 cases of scalp ringworm studied in Mexico City, 91·8 per cent. were due to *Trichophyton* spp. (89·4 per cent. to *T. tonsurans*) and 8·2 per cent. to *Microsporum canis*. The authors regard all the crateriform *T.* species (*T. acuminatum*, *T. cerebriforme*, *T. crateriforme*, *T. epilans*, *T. plicatile*, *T. sabouraudi*, and *T. sulphureum*) as synonyms of *T. tonsurans*, which they consider the only valid species of the group.

800. Catanei (A.). **Nouvelles observations sur les teignes en Algérie et dans les colonies françaises.** [New observations on ringworms in Algeria and in the French colonies.]—*Arch. Inst. Pasteur Algér.*, xxiv, 2, pp. 116–121, 1946.

From a parasitological study of 997 cases of ringworm of the scalp among the juvenile population of Algiers it was ascertained that *Trichophyton glabrum* and *T. violaceum* were responsible for four-fifths of the cases in Europeans and for practically all those of the Moslems, the former species being four times more frequent than the latter in the European quarter and three times more in the native. Of the remaining agents of trichophytosis, *T. acuminatum* and *T. fumatum* were the most prevalent, while *T. crateriforme*, *T. umbilicatum*, *T. regulare*, and *T. plicatile* were isolated in individual cases. Microsporosis, invariably caused by *Microsporum canis*, was observed every year from 1934 to 1942, but its incidence was only about one-twentieth as high as that of trichophytosis. In all the 61 patients suffering from favus *Achorion schoenleini* was identified as the causal organism.

Some parasitological and clinical observations are made in connexion with a study of *Ctenomyces* [*T.*] *mentagrophytes* on the skin of adults and juvenile scalps, and of the cutaneous lesions induced by *T. violaceum* and *T. glabrum* in children.

T. violaceum and *M. obesum* were isolated from juvenile ringworms in the French Cameroons, and the fungus isolated from a cock's comb in 1939 was identified as *M. gallinae*. *M. audouini* was observed causing microsporosis in the Dosso region of Nigeria. *T. umbilicatum* and *T. fumatum* were isolated from patients in different parts of Madagascar, where species of the *T. acuminatum* and *T. crateriforme* groups are also apparently not uncommon.

801. Catanei (A.). **Nouvelles recherches expérimentales sur la résistance aux réinfections dans les teignes. Effets des réinoculations successives.** [New experimental researches on resistance to reinfections in ringworms. Effects of successive reinoculations.]—*Arch. Inst. Pasteur Algér.*, xxiv, 1, pp. 32–43, 1946.

The immunity established in the guinea-pig by artificial infection with *Ctenomyces* [*Trichophyton*] *mentagrophytes* can be reinforced by a fresh reinoculation. Subsequent reinoculations do not prolong the duration of the resistance, and beyond a certain limit, almost invariably reached after the second

reinoculation, resistance to reinfection is no longer enhanced by these operations. The resistance of the animals to cutaneous reinfection by *T. mentagrophytes* is weakened when the reinoculation follows a peritoneal infection of the fungus, and fresh infection often develops. The symptoms induced on the coat by reinfection present characteristic features indicating a lessened disseminative capacity on the part of the parasite.

802. Gomez (J. E.). **Tokelau in Guatemala.**—*Arch. Derm. Syph., N.Y.*, liii, 3, pp. 243–248, 3 figs., 1946.

Eleven cases (eight in females) of 'tokelau', which occurs in classic form in Guatemala, have been studied in detail. The causal organism is *Trichophyton concentricum*, among the synonyms of which are *Aspergillus tokelau*, *Endodermophyton concentricum*, *E. indicum*, and *E. tropicalis*. Therapeutic measures were only partially successful, the most promising of the preparations tried being iodoxyquinolinsulphonate of sodium.

803. Muskatblit (E.). **Dermatophytosis due to combined infection with Trichophyton interdigitale and Trichophyton purpureum. Report of a case.**—*Arch. Derm. Syph., N.Y.*, liv, 5, pp. 558–559, 1 fig., 1946.

Trichophyton interdigitale and *T. purpureum* were jointly isolated from a vesicular eruption on the left foot of a 42-year-old woman in New York, who was also suffering from a similar condition of both hands (dermatophytid). A cure was effected by daily applications to the foot of a 5 per cent. solution of salicylic acid in alcohol and treatment of the hands with a zinc oxide-talcum lotion, supplemented by four fractional doses of X-rays (75 r) at weekly intervals.

804. MacKee (G. M.), Herrmann (F.), & Karp (F. L.). **A new treatment for anthropophilic tinea tonsurans (Microsporon audouini). A preliminary report.**—*J. invest. Derm.*, vii, 1, pp. 43–52, 1946.

Of 59 children aged from 2 to 15 years treated for tinea tonsurans (*Microsporum audouini*) at the New York Post-Graduate Medical School and Hospital with trimethyl cetyl ammonium pentachlorphenate in a combination of solvents, 32 (54 per cent.) were cured in an average period of 14 weeks.

805. Miller (J. L.), Lowenfish (F. P.), & Beattie (Guila F.). **Local treatment of tinea capitis.**—*J. Amer. med. Ass.*, cxxxii, 2, pp. 67–70, 1946.

Among the persons admitted to the Vanderbilt Clinic, New York, between 1st January, 1943, and 1st May, 1945, were 928 new cases of tinea capitis, of which 96·9 per cent. were caused by *Microsporum audouini*. None of the numerous fungicides tested on small groups of patients appeared outstanding, nor were the three (dinitrocyclohexyl phenol, sodium propionate, and undecylenic acid) subjected to closer investigation sufficiently effective to be of practical value in therapeutic treatment. The fungicides did, however, generally serve to prevent the spread of infection, and thus constitute an essential adjuvant to manual epilation (also not invariably successful, however thoroughly performed): iodine and mercury seem to be equally fungistatic with any of the newer preparations tried.

806. Strickler (A.). **Tinea capitis. Its treatment with special iodine and dilute acetic acid.**—*J. Amer. med. Ass.*, cxxxii, 2, pp. 65–66, 1946.

Of 115 children (the great majority five- to six-year-old boys) suffering from tinea capitis in Philadelphia, the author successfully treated 74 (64 per cent.) by local applications of a mixture consisting of 78 per cent. iodine,

2 per cent. red blood cells, 1·9 per cent. sodium chloride, 0·07 per cent. chlorophyll (2 per cent. in isotonic solution of sodium chloride), 10 per cent. deceresol (a wetting agent), 8 per cent. magnesium dioxide, and 0·005 per cent. spleen extract. The mixture is incorporated in cottonseed soil (2 gm. of the former to 30 of the latter). *Microsporum audouini* was the agent of infection in 73 of the patients and *Trichophyton gypseum* in one.

807. Strickler (A.). **Treatment of tinea capitis with special iodine and dilute acetic acid : preliminary report of results.**—*Arch. Derm. Syph., N.Y.*, liii, 5, pp. 454–457, 1946.

By means of a mixture of iodine crystals, red blood cells, chlorophyll, and magnesium dioxide, combined with benzoinated lard in the proportion of 2:32 gm., the writer cured 27 out of 60 patients (45 per cent.), mostly boys of 4 to 11, suffering from tinea capitis (*Microsporum audouini*) at Philadelphia.

808. Smorodintsev (A. N.), Kozhevnikov (P. V.), & Cherniak (E. N.). **The struggle against fungus diseases in the Turkmenian S.S.R.**—*Amer. Rev. Soviet Med.*, iii, 3, pp. 240–242, 1946.

Details are given of the work done in the first half of a three-year campaign for the eradication of fungal diseases [? dermatophytes] in the Turkmenian S.S.R. In two cities, 10,334 of 13,043 discovered cases received X-ray treatment, and 7,624 of the inspected, irradiated cases became cured.

809. MacKee (G. M.), Mutscheller (A.), & Cipollaro (A. C.). **Treatment of tinea capitis with Roentgen rays.**—*Arch. Derm. Syph., N.Y.*, liii, 5, pp. 458–470, 3 diags., 1946.

Using a simple four-point method of Roentgen-ray epilation devised by themselves, the authors treated, for the most part with complete success, 75 cases of tinea capitis (*Microsporum audouini*) in New York. For routine work, however, the well-known five-point technique of Adamson-Kienboeck, which has been widely used by American dermatologists since 1909 (*Lancet*, p. 1378, 15th May), is recommended as convenient and safe in application. The paper was followed by a discussion.

810. Carrick (L.). **Methods of local therapy for tinea capitis due to Microsporum audouini.**—*J. Amer. med. Ass.*, cxxxi, 15, pp. 1189–1194, 1946.

Of 171 cases of tinea capitis diagnosed under Wood's light between October, 1944, and March, 1946, at the City of Detroit Receiving Hospital, 169 (98·8 per cent.) were due to *Microsporum audouini*, and the remaining 2 (1·2) to *M. lanosum*. The ratio of boys to girls was 4·3 to 1, 62 per cent. of the patients being white and their ages ranging from 1 to 13 years; the majority of cases fell into the 4- to 9-year group. Copper oleate ointment, though only partially fungistatic and altogether non-fungicidal *in vitro*, was of some clinical value in 7 out of 17 cases (41·2 per cent.), after an average period of 132 days. Undecylenate-undecylenic acid ointment cured 10 out of 25 (40 per cent.) in 125 days and effected a considerable improvement in a further 8 (32 per cent.) in 127 days, the corresponding figures for propionate-propionic acid being 15 out of 37 (40·6 per cent.) in 108 days and 7 (18·9) in 133.

811. Waisman (M.). **Recurrent, fixed erysipelas-like dermatophytid.**—*Arch. Derm. Syph., N.Y.*, liii, 1, pp. 10–18, 4 figs., 1946.

A case is presented of recurrent, erysipelas-like lesions on the left thigh of a 32-year-old soldier in the Army of the United States, representing localized hypersensitivity of the skin to fungal products originating from the focus of

dermatophytosis on the feet. Material from the epidermal vesicles on the latter gave rise to *Trichophyton interdigitale* on Sabouraud's medium. The paper was followed by a discussion.

812. Matthews (J. D.). **An investigation of feet in Trentham Military Camp with special reference to fungus infection.**—*J. roy. Army med. Cps*, lxxxvi, 6, pp. 243–248, 1946.

Of 2,008 men examined at Trentham Military Camp, New Zealand, 1,276 (63 per cent.) presented abnormalities of the skin between the toes, but in only 94 of these (8·9 per cent.) was the condition of [unspecified] fungal origin. Of 261 men recently returned from furlough, only five showed fungal infection, which was entirely absent in a unit of 174 of the Women's Army Auxiliary Corps.

813. Hopkins (J. G.), Fisher (J. K.), Hillegas (A. B.), Ledin (R. B.), Rebell (G. C.), & Camp (E.). **Fungistatic agents for treatment of dermatophytosis.**—*J. invest. Derm.*, vii, 5, pp. 239–253, 20 graphs, 1946.

In tests covering a three-year period on 7,500 members of the armed forces stationed at Fort Benning, Georgia, undecylenic acid and di-nitro-cyclohexyl-phenol (DN) gave the maximum percentage of satisfactory clinical results in dermatophytosis of the feet. DN and trichlorophenol were the most rapidly fungistatic of the disinfectants tested but frequently caused irritation, the incidence of which was lowest with undecylenic, propionic, and benzoic acids. Undecylenic acid, combining a high degree of efficiency with comparative freedom from irritant properties, was the best of the fungicides used in the trials for the routine therapy of subacute cases. None of the preparations gave immediate relief or was ultimately successful on every patient.

814. Freis (E. D.). **Treatment of dermatophytosis and hyperhidrosis with formaldehyde and cupric sulfate iontophoresis.**—*Arch. Derm. Syph., N.Y.*, liii, 1, pp. 34–38, 3 figs., 1 diag., 1946. [*B.H.*, xxi, 514; *B.A.*, xx, No. 15829.]

The writer's results in the treatment of dermatophytosis and hyperhidrosis in soldiers of the United States Army by formaldehyde and cupric sulphate iontophoresis indicate that prompt clinical remission of the symptoms is effected in some 75 per cent. of the cases.

815. Gray (A.). **The prevention and treatment of tinea pedis.**—*Mon. Bull. Minist. Hlth*, v, pp. 100–104, 1946. [*B.H.*, xxi, 586.]

Practical directions are given for the medical treatment of the allergic manifestations known as dermatophytids, which are not uncommon, especially in infections due to *Trichophyton gypseum*. Prophylaxis mainly consists in precautions against infection, such as wearing protective rubber shoes in bathing-rooms, washing the feet daily, especially the interdigital clefts, and using a dusting powder of 1 per cent. salicylic acid in talc. Shoes and woollen socks may be sterilized by formol vapour and cotton socks by boiling.

816. Weidman (F. D.) & Glass (F. A.). **Dermatophytosis and other forms of intertriginous dermatitis of the feet: a comparison of therapeutic methods.**—*Arch. Derm. Syph., N.Y.*, liii, 3, pp. 213–225, 1 graph, 1946. [*T.D.B.*, xliii, 955.]

Of six medicaments applied to 117 inmates of a penitentiary for the control of 'winter dermatophytosis', metacresylacetate (cresatin, manufactured by Sharpe and Dohme, Inc., Philadelphia) gave the best results, closely followed by boric acid powder. The lesions caused by *Trichophyton purpureum*, which

were almost exclusively confined to the younger patients and occurred twice as frequently in the white race as among negroes, were neither particularly distinctive nor refractory to treatment. *Epidermophyton inguinale* [*E. floccosum*] was isolated only once, *T. interdigitale* being the most prevalent species considering all ages as a whole.

817. Hillegas (A. B.) & Camp (E.). **The testing of fungicides insoluble in water.**—*J. invest. Derm.*, vi, 3, pp. 217–226, 1945.

The conidia of *Trichophyton gypseum* were found to be resistant to 15 minutes' exposure to 25 per cent. alcohol, 50 per cent. acetone, 80 per cent. propylene glycol, and 95 per cent. triethanolamine. The fungicidal activity of a substance is not appreciably modified by a solvent in which it is readily soluble. The maximum fungicidal action of propionic acid was exerted at pH 5 in a 1 in 5 dilution, and that of undecylenic acid at pH 8 in a 1 in 80 dilution. The fungistatic effect of propionic acid was most marked at pH 5 (1 in 80), but it was inferior in this respect to undecylenic acid at pH 8 (1 in 8,000). Using the cylinder-plate method of assessing fungistatic activity, $\frac{2}{3}$ penicylinder of 95 per cent. alcohol could be used without inhibition of *Monilia* [*Candida*] *albicans*, but only one drop, replenished after 48 hours, could be used without inhibition of *T. gypseum*. The same concentration of 80 per cent. propylene glycol did not suppress *C. albicans*, while at 60 per cent. this solvent was fungistatic to *T. gypseum* but not to *T. purpureum*.

818. Sulzberger (M. B.), Shaw (H. C.), & Kanof (A.). **Evaluation of measures for use against common fungous infections of skin ; screening tests by means of paired comparisons on human subjects.**—*Nav. med. Bull., Wash.*, xlv, 2, pp. 237–248, 1945. [*T.D.B.*, xlii, 1028.]

The authors present the results of an investigation made among a controlled population in a Naval Disciplinary Barracks to determine the efficacy of five different medicaments in the prophylaxis of fungal infections of the feet and groin. In all, 808 volunteers were used. The materials tested were (*a*) undecylenic acid-zinc undecylenate powder, (*b*) sodium propionate powder, (*c*) boric-acid-salicylic acid powder, (*d*) undecylenic acid-zinc undecylenate ointment, (*e*) clothing impregnated with Impregnite CC3 by an oil-in-water emulsion process. The prophylaxis tests were confined to protection of the feet from fungal infection. In the control group, 8·85 per cent. developed infection. The undecylenic acid and the sodium propionate powders afforded the best results. When the preparations were used against active fungal infections of the feet and groin, undecylenic acid-undecylenate powder and sodium propionate powder were effective on both areas, the former more so than the latter, particularly in the crural area. Undecylenic acid-zinc undecylenate applied to the feet as ointment was not superior to the powder form. Shorts and socks impregnated with CC3 had no significant therapeutic effect.

819. Sulzberger (M. B.) & Kanof (A.). **Comparative evaluation of preparations for the prophylaxis and treatment of fungous infections of feet.**—*Nav. med. Bull., Wash.*, xlvi, 6, pp. 822–833, 2 graphs, 1946.

In an unselected series of 1,152 male inmates of a New York penitentiary examined in the summer of 1945, 163 (14 per cent.) showed clinical symptoms of infection. Undecylenic powder was found to be the most effective, practical, and acceptable of the various prophylactics tested, the formula used consisting of 20 parts zinc undecylenate (Wallace & Tiernan Products, Inc., Belleville, N.J.), 76 parts talc, and 2 parts each of undecylenic acid, grade AA, and dibenzo-thio-indigo (red).

820. Lahey (W. J.) & Byrnes (J. E.). **The copper ionization treatment of fungous infections.**—*Nav. med. Bull., Wash.*, xlvi, 4, pp. 554–557, 1946.

The copper ionization bath proved to be a safe and valuable method of treatment of interdigital and dyshydrotic fungal infections over a six-month period at an advanced base in the Pacific. The baths were constructed and operated according to the plan presented by Knox (*Nav. med. Bull., Wash.*, xli, p. 1746, 1943), with several minor adjustments. Of the 154 cases from the personnel of a Naval construction battalion subjected to the treatment, 65 and 23 per cent., respectively, were completely cured or significantly benefited. The dyshydrotic type was considerably more refractory to therapy than the interdigital.

821. Lewis (G. M.) & Hopper (Mary E.). **Management of dermatophytosis (in part).**—*Sth. med. J.*, xxxix, 3, pp. 246–249, 1946. [*B.H.*, xxi, 515.]

The writers' recommendations for the treatment of three forms of dermatophytosis are based on the results of laboratory studies and clinical practice at the New York Hospital from 1940 to 1943, during which period scrapings from 190 (37·6 per cent.) of the 505 positive cases from 1,399 patients examined yielded *Trichophyton gypseum* in pure culture, 130 (25·7 per cent.) *T. purpureum*, and 20 (4 per cent.) *Epidermophyton inguinale* [*E. floccosum*].

822. Ghosh (L. M.) & Panja (D.). **Studies of ringworm, Part III. Prophylactic measures.**—*Indian med. Gaz.*, lxxxi, 2, pp. 73–75, 1946.

At the School of Tropical Medicine, Calcutta, a 4 per cent. solution of glacial acetic acid in 25 per cent. alcohol was found to be effective in the prevention of ringworm (*Epidermophyton floccosum*) infection. In laboratory tests it killed the fungus in one minute at a dilution of 1 in 1,000 and in five minutes at 1 in 2,000, the corresponding concentrations in alcoholic solutions necessary to produce lethal effects in the same periods being 1 in 4,000 and 1 in 5,000, respectively.

823. Robbins (W. J.) & McVeigh (Ilda). **Effect of hydroxyproline on Trichophyton mentagrophytes and other fungi.**—*Amer. J. Bot.*, xxxiii, 8, pp. 638–647, 6 figs., 1 graph, 1946.

The growth of *Trichophyton mentagrophytes* on a basal medium of minerals and dextrose supplements with asparagin was inhibited by *l*-hydroxyproline at a concentration of 1 in 20,000. Two pleomorphic forms were less susceptible and a third grew in a concentration of 1 in 160. The inhibitory effects of hydroxyproline were partly overcome by *l*-proline. *T. gypseum* (granular form), *T. purpureum*, *Epidermophyton floccosum*, and *Microsporum canis* were also inhibited to varying extent by hydroxyproline; *T. purpureum* was stimulated by small amounts and inhibited by larger. Growth of 19 other fungi was not injured by hydroxyproline at strengths inhibitory to the dermatophytes. Methyl proline, its copper salt, and proline piccate were less inhibitory than hydroxyproline.

824. Kleinberg (J.) & Meyer (Esther). **In vitro action of monopyridine iodine (I) p-nitrobenzoate against ringworm fungi.**—*Science*, civ, pp. 398–399, 1946.

In tests against *Trichophyton gypseum* and *Microsporum audouini* the authors found that low concentrations of the dry powder of monopyridine iodine (I) *p*-nitrobenzoate in sterile talc were not only effective in preventing growth of the fungi, but were also extremely active towards their dried spores.

825. **New powder for fungus infections.**—*Hosp. Cps Quart.*, xix, 1, pp. 3–8, 1946. [*B.A.*, xx, No. 10696.]

In the prophylaxis and treatment of fungal infections, undecylenic acid and propionic acid and their salts were superior to the boric acid-salicylic acid powders. The good results in prophylaxis were paralleled in therapeutic tests.

826. McCarthy (E.). **Powder packs for treatment of fungus.**—*Hosp. Cps Quart.*, xix, 3, p. 13, 1946.

Over 70 severe cases of fungal infections of the feet healed almost completely in nine days following powder-pack treatment. The formula is salicylic acid 10 gm., benzoic acid 10 gm., boric acid 5 gm., resorcinol 5 gm., thymol 5 gm., camphor 5 gm., and talc to 100 gm. The powder is placed in position, the site bandaged, and the foot immersed after removal of bandage 24 hours later in cold boric acid soaks for half-an-hour. The area is dried and more powder applied, treatment being repeated until a cure is effected.

827. Harder (F. K.). **The antimycotic effect of diethylstilbestrol.**—*N. C. med. J.*, vii, 1, pp. 20–22, 1946.

Diethylstilbestrol prevented the growth in pure culture of *Microsporum gypseum* and *Trichophyton* [*Achorion*] *schoenleini* at a concentration of 1 in 20,000, *M. audouini*, *M. canis*, and *T. mentagrophytes* at 1 in 40,000, *Epidermophyton floccosum* and *T. rubrum* at 1 in 60,000, and *Blastomyces dermatitidis* and *Histoplasma capsulatum* at 1 in 100,000. It also proved effective at a strength of 0·13 per cent., in conjunction with Whitfield's ointment, in the local treatment of superficial mycoses at Greensboro, North Carolina.

828. Johnson (E. A.) & Burdon (K. L.). **Eumycin—a new antibiotic active against pathogenic fungi and higher bacteria, including bacilli of tuberculosis and diphtheria.**—Abs. in *J. Bact.*, li, 5, p. 591, 1946.

'Eumycin' is the name given to a new antibiotic extracted from *Bacillus subtilis* which entirely prevents or definitely inhibits, at concentrations of 0·1 to 0·3 mg. (dry weight) per ml. of medium, the growth of *Trichophyton mentagrophytes*, *Microsporum gypseum*, *Epidermophyton floccosum* and related species, *Actinomyces*, and *Mycobacterium tuberculosis*, while the development of *Corynebacterium diphtheriae* is arrested at 0·005 mg. per ml. The substance is slightly less toxic to *Sporotrichum* and *Hormodendrum* spp. It is soluble in butyl and ethyl alcohol and acetone and its pathogenicity to mice is of a low grade.

829. Lewis (G. M.), Hopper (Mary E.), & Shultz (Selma). **In vitro fungistasis by a bacterium (Bacillus subtilis var. XG and XY).**—*Arch. Derm. Syph., N.Y.*, liv, 3, pp. 300–307, 2 figs., 1946.

An unknown variety of *Bacillus subtilis*, herein designated XG and XY, occurring as an accidental contaminant in an agar culture of *Trichophyton gypseum*, was observed to inhibit the growth of the fungus. Other species experimentally shown to be similarly susceptible to the fungistatic action of the bacterium included *T. purpureum*, *T. crateriforme*, *Microsporum audouini*, *M. lanosum*, *M. fulvum*, *Monilia* [*Candida*] *albicans*, and *Sporotrichum schencki*. The inhibitory substance was present in a Seitz filtrate and still potent after eleven months' storage on ice. The filtrate also contained a haemolytic principle, which was destroyed, together with the fungistatic substance, by one hour's heating at 100° C.

830. Salvin (S. B.). **An antifungal substance from a strain of Aspergillus flavus.**—*J. Bact.*, lii, 5, pp. 614–615, 1946.

A strain (No. 70) of *Aspergillus flavus* produced an anti-fungal substance resembling aspergillic acid, which, at a concentration of 0·025 mg. per ml., completely inhibited the growth on a glucose-peptone broth medium of *Candida albicans*, *Nocardia* [*Actinomyces*] *asteroides*, three strains of *Trichophyton mentagrophytes*, *T. rubrum*, *T. tonsurans*, *Microsporum rubrum*, and *Epidermophyton floccosum*; *M. gypseum* was less sensitive.

831. Hoerlein (A. B.). **Studies on animal dermatomycoses. I. Clinical studies. II. Cultural studies.**—*Cornell Vet.*, xxv, 4, pp. 287–298; 299–307, 1945. [*B.A.*, xx, Nos. 6962, 6963.]

These studies on animal dermatomycoses relate to work already noticed from another source [entry No. 632].

832. Haubrich (L. R.) & Haubrich (W. R.). **Report on the use of a new acid-ester preparation in certain dermatological conditions in animals.**—*J. Amer. vet. med. Ass.*, cviii, p. 169–171, 1946.

Thirty-eight cases of ringworm in dairy cattle were treated by swabbing the lesions once or twice daily with full strength cerbinol (Westbury Chemical Co., New York), the active ingredients of which are malic, salicylic, and benzoic acids and their propylene glycol esters in a propylene glycol-water medium. Most of the cases became clinically free of lesions in seven to ten days. Animals treated twice daily did not improve more quickly than those given only one application a day.

833. Machado Guimarães (L.) & Lacerda (P. M. G.). **Micose em Bovinos de São Paulo por 'Trichophyton faviforme album' (Sabouraud, 1909).** [Mycosis in Cattle of São Paulo caused by *Trichophyton faviforme album* (Sabouraud, 1909).]—*Rev. Fac. Med. vet., S. Paulo*, iii, 1–2, pp. 151–154, 2 pl., 1945.

Trichophyton faviforme album was identified as the agent of ringworm in nine steers from two localities in São Paulo, Brazil. Pure cultures could not be obtained from the animal hairs or scrapings, but the fungus was isolated on dextrose media from an experimentally induced human lesion.

834. Pallaske. **Die Hautkrankheiten des Pferdes und ihre Bekämpfung.** [The skin diseases of the Horse and their control.]—*Mitt. Landw., Berl.*, lix, 15, pp. 338–340, 6 figs., 1944.

In normal times equine dermatomycoses are mostly sporadic in Germany, but during the war several epidemics were reported among horses returning from the Sudeten region and the western front. Fungi responsible for the disorders included *Trichophyton equinum*, *Microsporum equinum*, and *Achorion* [*schoenleini*], the first two causing ringworm and the last-named favus. The pathogens readily pass from the animals to their attendants, who in turn serve as fresh foci of infection. In addition to scrupulous hygienic precautions, the author recommends treatment of the sores with sulphur soaps incorporating a disinfectant, e.g., creolin, salicylate, or formalin, and (especially in cases involving large areas of the body) fumigation with sulphur dioxide.

835. King (N. B.). **'Favus' or white comb disease of Poultry.**—*Agric. Gaz. N.S.W.*, lvii, 9, pp. 499–500, 1 fig., 1946.

The symptoms and mode of spread of favus or white comb of poultry (*Achorion gallinae*) are described and directions are given for its prevention

and cure. The former may be effected by the examination of all imported birds before admitting them to the flock, disinfection of all yards and runs where affected birds have been housed with 5 per cent. cresol solution, and a campaign against mice, a means of dissemination of the fungus, on infested premises; and the latter by the application to the lesions of an iodine-glycerine mixture (1:6) or formaldehyde ointment (1 oz. commercial formalin added to 1 lb. vaseline melted in boiling water).

836. Niño (F. L.). **Estudio micológico de una nueva observación de tricopatía piédrica con nodulos blancos en la República Argentina.** [Mycological study of a new observation of piedric tricopathy with white nodules in the Argentine Republic.]—*Prensa méd. argent.*, xxxii, 46, pp. 2280–2286, 4 pl., 5 figs., 1945. [English summary.]

The agent of a form of 'piédra' (a rare disease in Latin America including Argentina) producing white nodules on the hair of a male veterinary student in Buenos Aires was identified, on the basis of its mycological and parasitological characters, as *Trichosporon beigelii*.

837. Redaelli (P.) & Ciferri (R.). **Nuovi reperti di Trichosporon ed osservazioni intorno a questo genere.** [New findings of *Trichosporon* and observations concerning this genus.]—*Mycopathologia*, iii, 2, pp. 203–217, 2 pl., 1941. [English and Spanish summaries. Received October, 1946.]

The authors include in their study of the genus *Trichosporon* three strains isolated from man (two in Italy and one in Costa Rica), which they identify as *T. infestans* (two) and *T. cutaneum*. Other species are discussed and a provisional analytical key of species is presented.

838. Hotchkiss (Margaret). **Studies on complement fixation with mycological material.**—Abs. in *J. Bact.*, li, 3, p. 401, 1946.

A species of *Sporotrichum* isolated at the University of Kentucky from material aspirated from human bronchi was used to prepare a vaccine. After prolonged immunization of rabbits, serum was produced which could be used in complement-fixation tests on paper-filtered cultures of *Geotrichum* sp., *Penicillium notatum*, *Trichophyton gypseum*, the homologous *S.* sp., and *S. schencki*. Complete fixation was obtained with the homologous organism at 0·001 ml. and *S. schencki* at 0·005 (only partial at 0·001), and slight fixation with the other fungi tested.

839. Errecart (L. M.). **Sobre veintecinco casos de esporotricosis en el Departamento de Flores.** [On 25 cases of sporotrichosis in the Department of Flores.] —*Arch. Urug. Med.*, xxviii, 3, pp. 249–253, 1946. [English summary.]

Over a period of 14 years the author investigated 27 cases of sporotrichosis (*Rhinocladium beurmanni*) [*Sporotrichum schencki*], all in males, in the Department of Flores, Uruguay; in two the clinical and mycological data have yet to be completed. In one case a leg was involved, while in all the other patients infection was localized in the upper limbs.

840. Johnson (H. M.). **Sporotrichosis.**—*Arch. Derm. Syph., N.Y.*, liii, p. 55, 1946.

A case of sporotrichosis in a Filipino plantation labourer, involving the left arm with proximal lesions following the mesial lymphatic drainage. The lesions did not respond to sulphanilamide or sulphathiazole, or to penicillium-inoculated gauze dressings applied locally.

841. Moore (M.) & Ackerman (L. V.). **Sporotrichosis with radiate formation in tissue : report of a case.**—*Arch. Derm. Syph., N.Y.*, liii, 3, pp. 253–264, 3 figs., 1946. [*T.D.B.*, xliii, 957; *B.A.*, xx, No. 18020.]

Sporotrichum schencki was isolated in its typical form on dextrose agar from a nodule on the left thumb in which the fungus was present in its uncommon asteroid form (= *S. asteroides* Splendore). The patient was a 53-year-old male in a Columbia (Missouri) hospital. Treatment with potassium iodide resulted in an almost complete cure, but a slight recurrence had been observed at the time of writing.

842. Flo (S. C.) & Smith (P. E.). **Sporotrichosis.**—*New Engl. J. Med.*, xxiv, 2, pp. 50–53, 3 figs., 1946.

Sporotrichum schencki was isolated from pustules on the left thumb of a 41-year-old captain in the Army of the United States, the infection being a sequel to the trimming of barberry shrubs. A complete cure was effected in four weeks by the administration of a saturated solution of potassium iodide, starting with 10 drops and gradually increasing to 40 three times daily.

843. Marroquin (A. S.) & González (M. De Los A.). **Estudio micológico de 16 casos de esporotricosis en la ciudad de México.** [Mycological study of 16 cases of sporotrichosis in the city of Mexico.]—*An. Esc. nac. Cienc. biol., Mex.*, iv, 1, pp. 19–40, 5 figs., 1945. [*B.A.*, No. 6965.]

Sixteen cases of sporotrichosis in Mexico City were studied and classified in three types, localized lymphangitic, disseminated subcutaneous, and epidermal. *Sporotrichum schencki* was isolated and the morphological and biochemical reactions of the fungus are described. Biochemical characters alone proved inadequate for identification purposes.

844. Redaelli (P.) & Ciferri (R.). **Trattato di micopatologia umana. Vol. V. Le granulomatose fungine dell' Uomo nelle regione tropicali e subtropicali.** [Treatise of human mycopathology. Vol. V. The fungal granulomatoses of Man in tropical and subtropical regions.]—608 pp., 194 figs. (2 col.), 1 graph, 2 col. maps, Florence, Sansoni Edizioni Scientifiche, 1942. [Received April, 1946.]

The 16 chapters in this fifth volume of a treatise of human mycopathology under the general editorship of Prof. G. Pollacci, of the University of Pavia, deal, respectively, with (i) problems of tropical and subtropical climatology from a general standpoint and in relation to the origins of fungal diseases; (ii) pathogensis and general pathological anatomy of the human mycoses in the tropical and subtropical zones; (iii) classification and geographical distribution of the mycoses discussed in the present volume; (iv) bases of systematic mycology (this concludes the general part): the special part comprises (i) the actinomycotic granulomatosis; (ii) the rhinosporidial granuloma; (iii) the coccidioid granulomatosis; (iv) the paracoccidioid granulomatosis; (v) blastomycotic granulomatoses—Gilchrist's granulomatosis; (vi) blastomycotic granulomatoses—the debaryomycotic granulomatosis; (vii) blastomycotic granulomatoses—granulomatoses caused by various sporogenous and asporogenous yeasts; (viii) Darling's histoplasmosis; (ix) sporotrichotic granulomatosis; (x) the maduromycotic mycetomata; (xi) the mycotic verrucose dermatites; (xii) granulomatoses caused by various Hyphomycetes.

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